RAILROAD GAZETTE

FRIDAY, JANUARY 21.

NEWS OF THE WEEK.

We give below, in a condensed form, the leading news items of the week. These items will be found in detail in their appropriate columns.

MEETINGS NEXT WEEK.—St. Joseph & Grand Island, special, at Elwood, Kan.

ELECTIONS.—Cleveland, Lorain & Wheeling, F. H. Townsend, Purchasing Agent.—John T. Rich appointed Commissioner of Railroads in Michigan.—St. Louis & Chicago, A. G Kleinbeck appointed Superintendent.—Southern Pacific Co. appoints Creed Haymond General Solicitor.—Western Railroad Association re-elects old officers.

PERSONAL.—Died—Alex. McDonnell, railroad contractor in Canada.—Maj. Gen. Wm. B. Hazen.—J. Thomas Vose, Ex-President Boston, Concord & Montreal.

EARNINGS.—For December 37 roads report gross and 2 net earnings; 28 show increase in gross and 1 in net; 9 decrease in gross and 1 in net. For November 8 roads report gross and 4 net earnings, 6 showing increase in gross and 3 in net.

TRAFFIC.—Anthracite shipments for week, 505,899; eastern bituminous, 276,886; coke, 75,244 tons.—Belvidere Division, Pennsylvania Railroad carried 1,788,710 tons anthracite in 1886.—Chicago east-bound shipments last week, 44,017 tons.—Cotton receipts for week 59,896 bales interior, 142,915 at seaports. Cotton in sight to Jan. 14 was 5,063,184 bales.—New grain elevator of Norfolk Terminal Co., at Lambert's Point, Va.—New York received 54,459,380 gallons of milk and cream by rail in 1886.—Northwestern Freight Association will meet in Chicago, Jan. 25 to consider St. Paul and Minneapolis business.—Pass agreement adopted in Chicago will probably fall through.

CHANGES AND EXTENSIONS.—Arizona Mineral Belt road in Arizona begins work.—Atchison, Topeka & Santa Fe will enter St. Louis over the St. Louis, Kansas City & Colorado. Survey for new extension in Missouri.—Extension of Atlantic & Danville in Virginia.—Extension of Chattaroi road in Kentucky begun.—Extension of Chicago, Burlington & Northern in Illinois and Wisconsin.—Work on Cincinnati, Georgia & Florida proceeding through Tennessee and Alabama.—Contract awarded for extension, Denver & Rio Grande in Colorado.—Great American & European Short Line across Newfoundland and Cape Breton.—Gulf & Ship Island in Mississippi makes progress.—Contract awards for the Illinois Central extension from Freeport, Ill., to Chicago.—Jacksonville, Tampa & Key West opens its Tavares Division, 29 miles.—Work on Louisville, St. Louis & Texas road in Kentucky.—Additions to the Missouri Pacific in Kansas and Nebraska.—Ohio River road completes Parkersburg & Pt. Pleasant extension.—Extension of Southern Pacific in Southern California.—South Atlantic & Ohio begins tracklaying at Bristol, Tenn.—Texas, Santa Fe & Northern completed to its connection with the Denver & Rio Grande.—New Union depot at St. Louis.—New track reported for the week, 38; year to date, 43 miles.

LEASES, SALES, ETC.—Illinois Central *vs.* Baltimore & Ohio suit over Chicago terminals decided in favor of B. & O.—Suit against the Flint & Pere Marquette Railroad Co. at Detroit.—A. H. Johnson adjudged owner of 18 miles Missouri Pacific Branch to Helena.—Northern Pacific defeated on demurrer in Wells-Fargo suit.—Ohio & Mississippi, Springfield Division bondholders succeed in their contest with the company. Oregon & California sale to Southern Pacific finally arranged.—St. Louis, Arkansas & Texas reported sold to Jay Gould.

FORECLOSURES AND REORGANIZATIONS.—Purchasing Committee of Illinois Midland makes first payment of $400,000.—Reorganization of the Michigan & Ohio Railroad Co.—The Portland & Ogdensburg passes under the control of the new corporation.—Work of Texas & Pacific reorganization committee.

NEW COMPANIES ORGANIZED.—Atlanta & Alabama, at Atlanta, Ga.—Chicago, Paducah & New Orleans, at Chicago.—The Current River, in Missouri.—Kansas, Colorado & California, at Coolidge, Kan.—New railroad project through Lewis County, N. Y.—Omaha, Lincoln, Hartland & El Paso, at Omaha, Neb.

IN CONGRESS.—Inter-state Commerce bill passes the Senate.—House adopts resolutions to investigate Pacific Railroad management.—Bill introduced to keep Canadian cars and engines out of United States territory.

ACCIDENTS.—For December, 115 accidents are reported, with 35 persons killed and 129 hurt. For the year, 1,211 accidents, with 401 persons killed and 1,433 injured.

REPORTS AND FINANCIAL.—Chicago, Milwaukee & St. Paul offers $4,000,000 5 per cent. first-mortgage bonds for sale.—Grand Trunk, five months to Nov. 30, shows increase of 17 per cent. gross and 51 net.—Chicago & Grand Trunk, increase of 19⅓ per cent. gross and 100⅓ net.—Detroit, Grand Haven & Milwaukee, 5 gross and 18 net.—Cleveland & Canton shows increase of 23 per cent. gross and 131 net.—Lehigh Valley earned in 1886, $9,395,802 gross and $4,101,985 net; dividends 4 per cent.—Nashville, Chattanooga & St. Louis, half-year to Dec. 31, shows increase of 19 per cent. gross, 23½ net and 100⅓ per cent. in surplus over charges.—Rome, Watertown & Ogdensburg quarter ending Dec. 31, shows gain of 51 per cent. gross and 77 net. Company declares first dividend since 1875.—Portland & Ogdensburg for 1886 shows decrease of 0.2 per cent. in gross and increase of 23 per cent.—Troy & Boston for 1886 shows gain of 13 per cent. gross and 20 net. Charges exceeded net earnings by $22,194.

Train Accidents in December.

The following accidents are included in our record for the month of December:

COLLISIONS.

REAR.

1st, a. m., passenger train on Fall Brook road ran over a misplaced switch in Elmira, N. Y., and into freight standing on siding, damaging both engines.

1st, night, freight on Chicago, Burlington & Quincy ran into preceding freight near Aurora, Ill., wrecking caboose.

3d, p. m., passenger train on Long Island road ran into freight going onto a siding in Jamaica, N. Y., damaging locomotive, killing engineer and injuring fireman.

4th, p. m., freight on Shenandoah Valley ran into preceding freight near Balcony Falls, Va., wrecking 10 cars, killing 1 trainman and injuring 3 others.

5th, very early, freight on Pennsylvania Railroad ran into preceding freight at South Bristol, Pa., wrecking several cars and injuring a brakeman.

5th, p. m., passenger train on Pennsylvania Railroad ran into freight train stopped near Schancks, Pa., damaging 3 cars.

5th, night, freight on Chicago & Iowa ran into preceding freight at Big Rock, Ill., wrecking 3 cars. The wreck caught fire and was destroyed.

5th, night freight on Baltimore & Ohio ran into preceding freight near Frederick Junction, Md., wrecking several cars and injuring trainman.

7th, a. m., passenger train on Wabash, St. Louis & Pacific ran into another passenger standing on the track in St. Louis, damaging both engines. There was a dense fog at the time.

7th, night, freight on Boston & Albany ran into preceding freight near Becket, Mass., wrecking caboose.

8th, night, passenger train on Chicago, Burlington & Quincy ran into rear of switching freight in Aurora, Ill., damaging locomotive and injuring 2 trainmen slightly.

9th, a. m., passenger train on Baltimore & Ohio ran into freight which was going into a siding at Rockville, Md., damaging engine and injuring firemen slightly.

9th, night, freight on Buffalo, New York & Philadelphia ran into car left on the main track at East Buffalo, N. Y., damaging engine and injuring trainman slightly.

10th, a. m., freight on Memphis & Charleston ran into preceding freight near Memphis, Tenn. The conductor was badly hurt and 3 tramps who were stealing a ride killed.

13th, a. m., passenger train on Philadelphia & Reading ran over a misplaced switch and into freight on siding at Leesport, Pa., damaging both engines and injuring engineer.

13th, a. m., passenger train on New York, Lake Erie & Western ran into preceding passenger train which had stopped in Jersey City, damaging 1 car.

12th, night, freight on Atchison, Topeka & Santa Fe ran into cars broken loose from preceding freight near Emporia, Kan., wrecking 15 cars and injuring 3 trainmen.

14th, a. m., passenger train on Buffalo, New York & Philadelphia ran into rear of freight stopped at Rockwood, Pa., damaging locomotive and injuring 3 passengers.

17th, a. m., passenger train on Lehigh & Hudson River ran into rear of freight which had stopped at Sugar Loaf, N. Y., wrecking engine and several cars and killing a fireman. The freight had sent out a signal, which the other train did not see.

17th, night, passenger train on Ohio & Mississippi ran into rear of freight which had stopped at Odin, Ill., wrecking 3 cars.

19th, night, freight on Louisville, New Albany & Chicago ran into preceding freight which had stopped at Woodyard, Ind., wrecking engine and several cars and injuring engineer and fireman badly.

20th, night, freight on St. Paul, Minneapolis & Manitoba ran into preceding freight in Armstrong, Minn.

21st, a. m., freight on Philadelphia & Reading ran into rear of coal train near Bridgeport, Pa., piling up engine and 35 cars in a bad wreck.

21st, a. m., passenger train on New York, Lake Erie & Western ran into rear of freight stopped near Honesdale, Pa., damaging 2 cars and injuring brakeman. The freight had no signal out.

21st, night, freight on Louisville, New Albany & Chicago ran into preceding freight which had stopped at Ladoga, Ind., wrecking several cars and injuring 2 trainmen. A flagman had been sent out, but did not go far enough.

23d, a. m., passenger train on West Shore ran into freight standing on main track in Frankfort, N. Y., damaging 4 cars and the engine, injuring 3 trainmen slightly.

23d, p. m., passenger train on St. Louis, Arkansas & Texas ran into rear of freight at Mt. Pleasant, Tex., doing some damage.

24th, a. m., passenger train on Manhattan Elevated ran into preceding train at 86th street, New York, doing some damage. There was a dense fog at the time.

A precisely similar accident happened at 78th street about the same time.

24th, a. m., freight on Old Colony ran into rear of switching freight in Fall River, Mass., damaging several cars and injuring a trainman slightly.

24th, a. m., passenger train on New York, Lake Erie & Western ran into rear of freight in Paterson, N. J., damaging engine.

24th, night, freight on Utah & Northern ran into preceding freight near Mendon, Utah, wrecking several cars and killing a brakeman.

25th, a. m., passenger train on Grand Trunk ran into rear of freight at Komoka, Ont., wrecking several cars and injuring 2 trainmen.

25th, night, freight on Chicago & Atlantic ran into preceding freight at Preston, O., wrecking 20 cars and killing engineer.

25th, night, freight on Central of Georgia ran into preceding freight which had stopped for wood at Tenille, Ga., damaging several cars.

26th, night, passenger train on Northern Pacific ran into another passenger train just backing into a siding at Glendive, Mont., damaging several cars.

27th, p. m., freight on Albany & Susquehanna ran into work train just backing into a siding at Port Crane, N. Y., damaging both engines badly.

27th, night, freight on New Haven & Northampton ran into preceding freight in New Haven, Conn., damaging a car.

28th, a. m., freight on Boston & Albany ran into preceding freight near Westboro, Mass., piling 15 cars up in a bad wreck.

28th, p. m., freight on Missouri Pacific ran into preceding freight at Whiteright, Tex., wrecking several cars and injuring a trainman.

30th, early, passenger train on Manhattan Elevated ran into rear of preceding passenger train on the Coenties Slip curve in New York, damaging a car. It was snowing hard at the time.

30th, a. m., freight on Kansas City, Springfield & Memphis ran into cars broken loose from preceding freight near Springfield, Mo., wrecking several cars.

31st, very early, freight on West Shore ran into preceding freight stopped near Marleboro, N. Y., by a hot box, wrecking 7 cars. The first train ahead sent a signal, but a blinding snowstorm prevented it being seen.

31st, night, freight on Raleigh & Gaston broke in two near Forestville, N. C., and rear section ran into forward one, wrecking several cars.

31st, night, coal train on New York, Lake Erie & Western broke in two near Secaucus, N. Y., and rear section ran into forward one, wrecking several cars.

31st, night, freight on Southern Pacific ran into rear of construction train in a deep cut near Devil's River, Tex., piling up several cars in a bad wreck, which caught fire, destroying several cars. Five Mexican laborers were killed and 10 badly hurt.

BUTTING.

1st, a. m., butting collision between two passenger trains on Chicago, Milwaukee & St. Paul near Parker, Ia., wrecked both engines and several cars, killing 2 trainmen and injuring 5 others.

1st, a. m., butting collision between two passenger trains on Northern Pacific near Muscado, Minn., wrecked both engines, baggage car and injured 4 trainmen. The accident was caused by a dispatcher's mistake.

9th, a. m., butting collision between freight and passenger train on Missouri Pacific near Independence, Mo., wrecked both locomotives and 4 cars, injuring a trainman seriously and 2 passengers slightly.

9th, a. m., butting collision between freight and wild engine on Buffalo, New York & Philadelphia near Wilmington Junction, Pa., wrecking both engines, killing 2 trainmen and injuring 2 others.

9th, night, butting collision between two freights on Philadelphia & Reading near Annville, Pa., wrecked both engines and 3 cars. The wreck caught fire and several cars were destroyed.

12th, a. m., butting collision between passenger and freight train on Baltimore & Ohio near McKeesport, Pa., damaged both engines and injured a trainman.

13th, night, butting collision between freight and passenger train on Chicago, Burlington & Quincy near Moline, Ill., wrecked both engines, injuring 2 trainmen and 2 passengers. The freight was running on the passenger train's time.

14th, a. m., butting collision between two freights on Norfolk & Western near Cripple Creek Junction, Va., wrecked both engines and 6 cars and injured a trainman severely.

14th, p. m., butting collision between two freights on Baltimore & Ohio near Bellaire, O., damaged both engines and several cars. It was caused by a misunderstanding of orders.

15th, a. m., butting collision between two freights on Illinois Central near Baileyville, Ill., wrecked both engines and 21 cars.

15th, a. m., butting collision between two freights on New York, Chicago & St. Louis near Claypool, Ind., wrecked both engines and several cars.

15th, night, butting collision between two freights on Union Pacific at Wilkins, Kan., wrecked both engines, killing both firemen and injuring engineers.

17th, a. m., butting collision between two freights on Union Pacific near Rock Springs, Wyo., wrecked both engines and several cars, killing 2 trainmen and injuring 3 others.

17th, night, butting collision between two freights on Chicago & Northwestern near Trempealeau, Wis., wrecked both locomotives and 10 cars and injured 2 trainmen.

23d, a. m., butting collision between two freights on New York Central & Hudson River at Amsterdam, N. Y., damaged both engines slightly.

29th, a. m., butting collision between two freights on Wilmington & Northern near Cold Run, Pa., damaged both engines and several cars.

CROSSING.

15th, night, freight on Indianapolis & St. Louis ran into Belt Line freight at the crossing near Indianapolis, Ind., wrecking 2 cars.

25th, a. m., Wichita & Western freight ran into St. Louis, Ft. Scott & Wichita passenger at the crossing in Wichita, Kan., wrecking baggage car and injuring a trainman.

26th, p. m., Chicago, St. Louis & Pittsburgh passenger ran into Lake Erie & Western freight at the crossing in Tipton, Ind., damaging engine slightly.

DERAILMENTS.

BROKEN RAILS.

1st, night, freight on Boston & Lowell was derailed in Lowell, Mass., by broken rail. A brakeman was hurt.

2d, night, passenger train on Louisville, Evansville & St. Louis was derailed near Dale, Ind., by broken rail, injuring 5 passengers slightly.

3d, night, freight on Northern Pacific was derailed near Dulutb, Minn., by broken rail.

13th, a. m., passenger train on Chicago, Milwaukee & St. Paul struck a broken rail near Canton, Dak., and rear car was derailed and upset, injuring 3 passengers.

14th, a. m., freight on Toledo & Ohio Central was derailed near Johnstown, O., by broken rail, injuring 2 trainmen

BROKEN OR DEFECTIVE FROG.

11th, a. m., engine of passenger train on Manhattan Elevated was derailed at 104th street, New York, by broken frog and thrown over against a train on the other track, damaging 2 cars.

11th, a. m., passenger train on Pennsylvania Railroad was derailed at Brinton, Pa., by broken frog.

20th, night, car of passenger train on Georgia Pacific was derailed at Peyton, Ga., by defective frog and upset, injuring 5 passengers slightly.

27th, very early, freight on Missouri Pacific was derailed at Troy, Tex., by broken frog and 7 cars went down a steep bank, killing a tramp who was stealing a ride and injuring another.

28th, night, passenger train on Pittsburgh, Fort Wayne & Chicago was derailed at New Galilee, Pa., by a broken frog. Trainman and 5 passengers hurt.

BROKEN SWITCH-ROD.

16th, night, passenger train on Central Vermont was derailed at St. Alexander, Que., by broken switch-rod. A trainman and a passenger were slightly hurt.

BROKEN BRIDGE.

14th, night, passenger train on State University Branch of Richmond & Danville broke through trestle bridge near Chapel Hill, N. C., and the whole train fell about 20 feet, injuring 2 trainmen and 3 passengers. The passenger car caught fire and was destroyed.

20th, a. m., freight on Toledo, St. Louis & Kansas City broke through trestle bridge near Charleston, Ill., and 11 cars went down, injuring 2 trainmen.

23d, very early, freight on Houston & Texas Central broke through a trestle bridge near Plano, Tex., and 5 cars fell 50 ft. to the ground, killing a brakeman.

SPREADING OF RAILS.

5th, noon, freight on Georgia Railroad was derailed at Social Circle, Ga., by spreading of the rails.

9th, a. m., passenger train on Wisconsin Central was derailed near Neenah, Wis., by spreading of the rails. Two

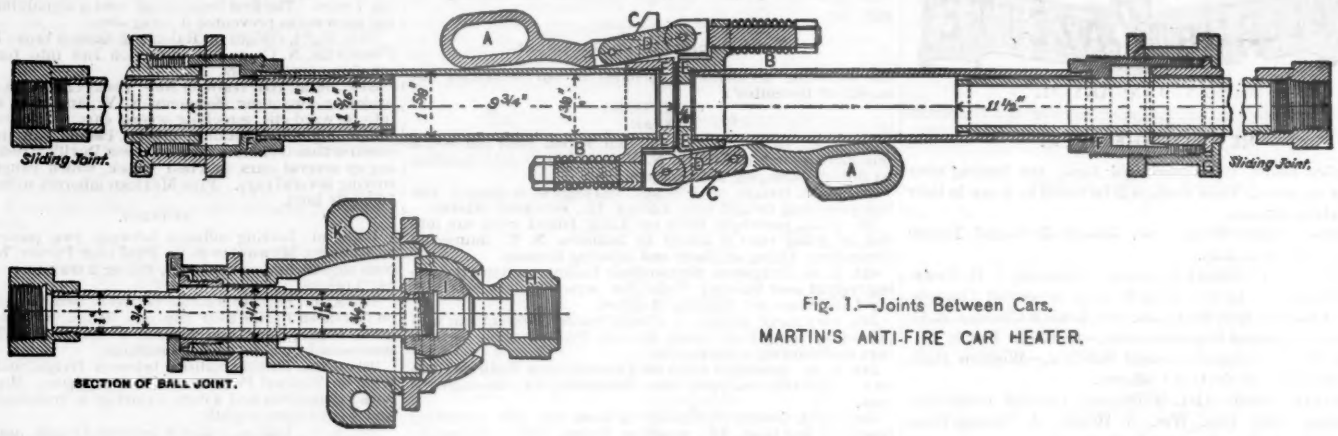


Fig. 1.—Joints Between Cars.

MARTIN'S ANTI-FIRE CAR HEATER.

cars upset, injuring 5 passengers. The wreck caught fire and 1 car was burned up.

19th, night, freight on Chesapeake, Ohio & Southwestern was derailed near Fulton, Tenn., by spreading of the rails.

22d, a. m., passenger train on Asheville & Spartanburg was derailed near Henderson, N. C., by spreading of the rails. The rear car upset down a bank, injuring 11 passengers.

25th, night, freight on Memphis & Charleston was derailed near Tuscumbia, Ala., by spreading of the rails, killing 2 trainmen and injuring 2 others.

BROKEN WHEEL.

16th, a. m., freight on Buffalo, New York & Philadelphia was derailed near Aurora, N. Y., by broken wheel.

21st, p. m., 11 cars of freight on Missouri Pacific were derailed near Abbott, Tex., by broken wheel.

27th, night, freight on Chicago, Milwaukee & St. Paul was derailed near Itaska, Ill., by broken wheel.

29th, night, freight on Baltimore & Ohio was derailed at Ellicott, Md., by broken wheel.

31st, night, freight on Chicago & Alton was derailed near Wilmington, Ill., by a broken wheel.

BROKEN AXLE.

1st, p. m., freight on Naugatuck road was derailed near Seymoure, Conn., by broken axle.

17th, very early, engine of freight on Cincinnati, New Orleans & Texas Pacific was derailed near Pine Knot, Tenn., by broken truck axle. The engine upset down a bank, killing engineer and fireman.

25th, a. m., freight on Pittsburgh, Cincinnati & St. Louis was derailed near Newark, O., by broken axle.

BROKEN TRUCKS.

30th, a. m., freight on New York, Lake Erie & Western was derailed near Goshen, N. Y., by broken truck.

ACCIDENTAL OBSTRUCTION.

21st, p. m., freight on St. Paul, Minneapolis & Manitoba was derailed near Ashby, Minn., by a log which had fallen from a flat car on a preceding freight.

CATTLE.

17th, very early, passenger train on Denver & Rio Grande ran over a cow near Gunnison, Colo., and the engine went down a bank into the Gunnison River, killing engineer and fireman.

RUNAWAY TRAIN.

9th, a. m., coal train on New York, Lake Erie & Western broke in two near Carbondale, Pa. The rear section ran down grade at a very high speed and jumped the track at a curve, running into a house adjoining the track and knocking it down.

MISPLACED SWITCH.

1st, p. m., freight on New York, Lake Erie & Western ran over a misplaced switch near Cochecton, N. Y., ran through the siding and went off the end of the siding, falling some 20 ft. The engine was badly wrecked.

2d, p.m., freight on New York, Lake Erie & Western was derailed at Port Jervis, N. Y., by misplaced switch.

3d, p.m., passenger train on Delaware & Hudson was derailed at Carbondale, Pa., by a misplaced switch.

9th, a.m., passenger train on Fitchburg road was derailed at West Cambridge, Mass., by misplaced switch.

16th, a m., freight on Pennsylvania Railroad was derailed near Columbia, Pa., by misplaced switch.

20th, a.m., freight on New York, Lake Erie & Western was derailed at Callicoon, N. Y., by misplaced switch.

UNEXPLAINED.

6th, night, engine of freight on New York, Lake Erie & Western was derailed at Otisville, N. Y.

6th, night, engine of freight on New York, Lake Erie & Western was derailed in Middletown, N. Y.

8th, a. m., freight on Richmond & Danville was derailed near Charlotte, N. C.

9th, a. m., passenger train on Pennsylvania Railroad was derailed in West Philadelphia.

13th, a. m., passenger train on Bell's Gap road was derailed near Glasgow, Pa., and went down a steep bank. Four passengers were hurt.

14th, a. m., passenger train on Cincinnati, New Orleans & Texas Pacific was derailed near Erlanger, Ky., and the car upset, injuring 1 passenger.

17th, a. m., 4 cars of freight on Pennsylvania Railroad were derailed near Renovo, Pa., killing one trainman and injuring 4 others.

19th, a. m., 2 cars of freight on Richmond & Danville were derailed near Durham, N. C., and upset down a bank.

30th, a. m., freight on Boston & Albany was derailed at Palmer, Mass.

OTHER ACCIDENRS.

BOILER EXPLOSIONS.

9th, p. m., locomotive of freight on Beech Creek exploded its boiler while standing at Jersey Shore, Pa. The engine was completely wrecked, fragments being thrown in every direction. The engineer, the fireman and 2 shopmen, who were standing near by, were killed.

28th, a. m., engine of freight on Canadian Pacific exploded its boiler while standing at Nepigon, Ont., injuring 2 trainmen and killing a third.

BROKEN PARALLEL ROD.

21st, p. m., engine of passenger train on New York, Lake Erie & Western broke a parallel rod when near Port Jervis, N. Y., and the loose end knocked a hole in the boiler.

BROKEN AXLE.

30th, p. m., axle broke under car of passenger train on Louisville & Nashville near Nashville, Tenn., but the car did not leave the track.

SUMMARY.

This is a total of 115 accidents, in which 35 persons were killed and 129 hurt. As compared with December, 1885, there was an increase of 41 accidents, and of 4 persons killed, but a decrease of 24 injured.

The year ending with December shows a total of 1,211 accidents, 401 killed and 1,433 hurt; a monthly average of 101 accidents, 33 killed and 119, injured.

A fuller statement of the totals and averages, with a summary and statement of the causes of these accidents, will be found in another column.

The Martin Anti-Fire Car Heater.

This car heater, which we illustrate in this number, is claimed First—To do away with fire in cars, thus removing what is known to be the most fruitful source of horror connected with any accident that is liable to occur while the coaches are in service. Second—To furnish a system by which heat enough can be produced to warm a car to 65° or 70° during the coldest weather we experience, and at the same time have it under such perfect control as to reduce it to meet the variations of temperature. Third—To furnish heat in such quantities as to permit a free ventilation and yet keep the temperature throughout the coach up to the requirements of comfort. Fourth—To furnish a system durable in service, simple in construction, with but few parts liable to wear, and economical in use.

To accomplish these results the live steam from the locomotive is used by putting a dry pipe in the dome, with a cut-off valve in the cab, to which is attached a reducing valve; from said valve a small pipe passes beneath the foot-board of the engine, to which is secured a metallic joint as seen in fig. 1, which conforms to every motion of the engine. Under the tender a main pipe is run, carefully wrapped, so as to prevent condensation; on each end of the main, a metallic joint, as in fig. 1, is screwed and strongly braced to the tender frame.

The coupling between the cars is made of metal and easily adjusts itself to every motion of the train. Reference to fig. 1 will show its construction. It is a cup and ball joint, having half ball *I*, with a hemispherical shell *H*, ground to a steam-tight surface on both sides. Outside this shell *H* is an outer sphere, divided in half, and screwed together. At the adjusting nut *L* there is a shoulder on the stem, against which the adjusting nut *L* impinges, forcing ball *I* against shell *H* and that against outer sphere, so as to compensate for all wear and keep it steam-tight. Attached to *H* by a nipple, is a sliding joint. On the end of sliding joints, at *E E*, is the connection proper, consisting of two halves, just alike, having metallic gaskets to couple two cars together. Levers *A A* are placed over studs *C C* and press them down. This connection is quickly adjusted and perfectly reliable, never having been known to fail in its work. To uncouple one lever (*A*) is pulled over stud *C*, and the coupling instantly separates.

We understand that these couplings have been tested on the air brake with perfect success.

Figure 3 illustrates the method of distributing the heat adopted. A continuous wrapped pipe runs from one end to the other, under the coach, as indicated by dotted lines in fig. 3. On each end are screwed the metallic couplings. At the centre of this line, two branch pipes pass off and up through the floor on each side of the aisle, as indicated in the fig. 3, and also seen in fig. 2, at the right hand seat shown. On each side of these branches, valves (shown in dotted lines in fig. 3) prevent the steam blowing off in rear of train should the car be the rear one. Steam passes from these branches into the radiating pipe shown in fig. 3. goes to each end of car and returns to the centre and passes down through return bend into a trap indicated in fig. 2, by the stub ended pipe appearing through the break in the floor.

Under the first seat is an angle valve in the entrance pipe, as shown in fig. 2, by which the steam is let into the radiating pipes, or shut out in main pipe, thus enabling the trainmen to shut it out of any car without affecting any other in the train.

The trap is simple in construction, being an elongated iron box with a strap of spring brass fastened at each end, and a valve suspended in the centre. The seat is adjusted to the valve to open or close it. The steam, acting on the strap of brass inside the iron box, bows it up and holds the valve against the seat. The strap straightens in the water, which opens the valve and lets the water escape. On roads where constant discharge is objectionable, a tank is used and carries the water to a terminal point, where it can be discharged. It is warranted not to freeze if allowed to discharge within a specified time.

The inventors claim that from 3 to 7 lbs. steam pressure is

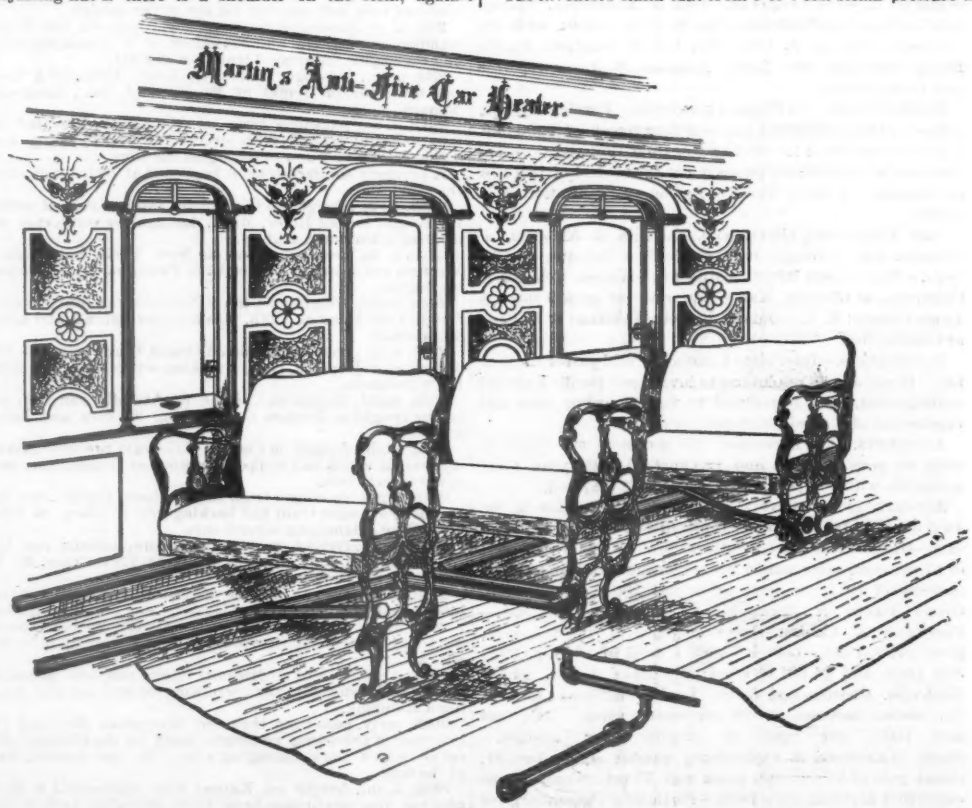


Fig. 2.

MARTIN'S ANTI-FIRE CAR HEATER.

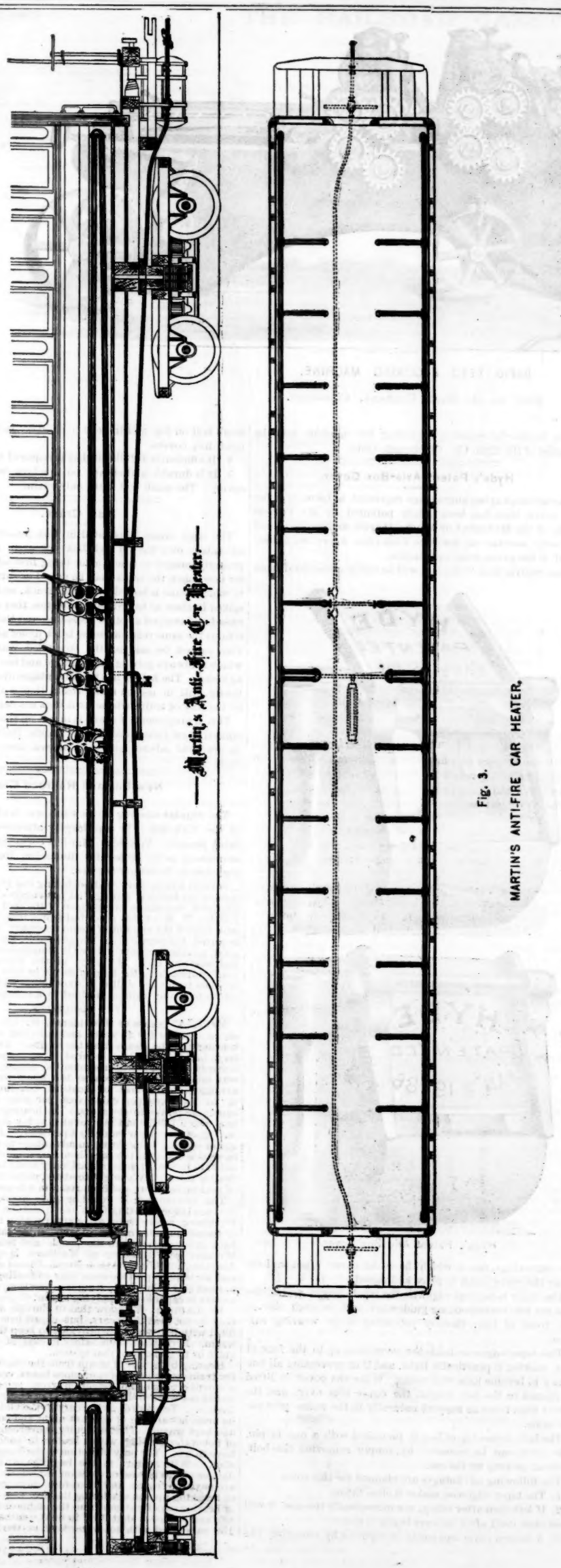


Fig. 3.
MARTIN'S ANTI-FIRE CAR HEATER.

ample in coldest weather, and that the pressure on the engine is not materially affected. One pound of steam at 160 lbs. pressure contains nearly 36,000 more units of heat than steam at atmospheric pressure. This heat is radiated into the car as the temperature is reduced, so that 5 lbs. of high steam will last much longer than 5 lbs. of low steam. Consequently it takes much less steam from a locomotive to do the heating than is generally supposed.

The inventors claim that experiments show that there is no danger of scalding from the steam in a collision, for the moment the cars are uncoupled the steam coupling comes apart without injury to it and allows the steam to pass off instantly below the platform, and the pressure in the cars is so light it would not be sufficient to injure any one.

If for any reason steam is cut off from the car it will keep warm from 30 minutes to one hour, as the steam in the pipes is confined until it condenses.

It is claimed to be capable of furnishing more heat than any method now in general use, and is the only system that gives absolute freedom from fire and an equal temperature in each car, with the chance to control it in any car without affecting the others in the train, and it will run all day without any attention after starting, other than turning off or on the steam to regulate the temperature.

It is claimed to be economical to maintain, as there are but few parts liable to wear out, and by its use a railroad company saves from $30 to $50 per car in fuel each winter.

It would appear that explosion is impossible, as the pressure is very light and the pipes can sustain a pressure equal to that in the engine without injury. There is nothing to freeze if the traps are adjusted right, as there is a constant grade of the pipe from the time the steam enters them until the condensation reaches the trap, which will discharge a spray of hot water running uncovered through an atmosphere as low in temperature as 20° below zero. With the atmosphere at zero a car can be made comfortable in from 30 to 40 minutes. With a thermometer in each car the train men can keep the temperature at any degree desired.

We understand that this system has never failed to give satisfaction after being tested, and that it has never been removed from any car. One order has always been followed by more. The Cleveland, Columbus, Cincinnati & Indianapolis, after testing it in 1884 and 1885, ordered more for 1885 and 1886. The Dunkirk, Allegheny Valley & Pittsburgh, after three years' experience, have equipped all their passenger engines and cars with it.

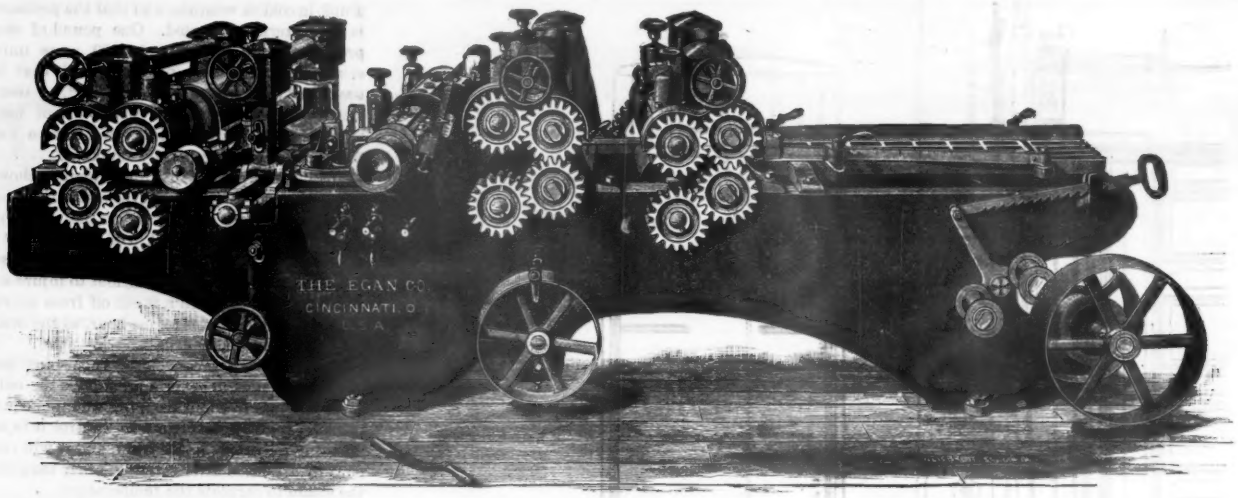
Further information can be had by applying to the company at Dunkirk, N. Y.

The Sherwin Williams Paint Works.

The paint works of this well-known company are situated at Cleveland, and are remarkably complete and well appointed. The large amount of machinery and the great variety of work done is calculated to astonish a visitor who might suppose that little beyond the mills for mixing and grinding were necessary to produce any quantity of paint. The visitor's first surprise awaits him in the fact that the paint works possess a large printing office having in all nine presses, and that even this large equipment is unable to execute all the printing needed, and much of it is done outside. The printing office occupies part of a large building used as a warehouse. The cellar floor is on a level with the floor of the freight cars on the Valley railroad track, and the ground floor is on the street level. Thus goods can be readily shipped either by road or rail. A bridge above the railroad tracks furnishes a means of communication between the warehouse and the various buildings in which the paints are made. The various packages in which the paints are contained are placed on small cars which are hauled across the bridge by means of a wire rope cable. The factory comprises several distinct buildings devoted to making different kinds of paints, liquid paints being made in one building. The raw materials are received at the ground floor. The oils, japans, etc., are emptied into underground reservoirs as received, and are then pumped into tanks in the top of the various buildings, whence they flow as needed. The engineer's shop, comprising two lathes and other machine tools, and the carpenter's shop are also situated on the ground floor. Some 6,000 stamping dies for tin paint cans are stored in underground fire-proof cellars.

The various mixing and grinding mills are situated in the upper stories. The proper proportions of oil, paint, etc., being put together flow into a mixing mill, where revolving stirrers incorporate the ingredients. When this process is sufficiently advanced, the stirrers are stopped, and the contents of the mill allowed to flow slowly into a grinding mill. Each grinding mill is served by two mixing mills, the contents of one of the latter being mixed and stirred while the contents of the other is running into the grinding mill. The grinding mills are constructed in a peculiar manner, and it is claimed are a great improvement upon other forms of mills. They are driven by gearing placed underneath the floor and not by belting as usual.

The liquid paint when finally ground sufficiently fine and thoroughly incorporated is run into the tin cans or vessels of various sizes prepared to receive it. The pipes conveying the paint from tanks above terminate in a sort of faucet or mouth controlled by a valve, and placed immediately above a weigh table. An attendant places an empty can on the weigh table, turns the valve and the paint flows into the can. The weigh table is adjusted to give warning, when the proper weight of paint has run into the can, and as the cans are all made by machinery, and are therefore of exact size, each can of paint is both measured and weighed. The can being thus filled, is placed on a car running on a small tramway and is taken to a machine which fastens the cover securely. The



RAPID FEED FLOORING MACHINE.

Built by the EGAN COMPANY, *Cincinnati.*

cans are then taken to another room, where they are labelled and boxed.

A large proportion of the total quantity of paint made is sent away in tin cans containing from 1 or 2 lbs. to 30 lbs. of paint. These cans are all made on the works, a very complete set of machines being used for cutting sheets to size, stamping the ends, bending the cylindrical part and filleting and bending the sides and ends. These fillets are then "spun," or turned, by machines which firmly unite the two principal parts of the can. The cans are soldered by a large and very ingenious machine, which deserves a longer description than we are able to give. The unsoldered cans are placed by boys on one end of a travelling band that runs the length of the machine. A chain running above the cans, and bearing on them, causes them to revolve as they pass gas jets and soldering irons, etc., which solder the joints of each can as it passes. The joints are tested by pressing the open end of the can upon a rubber dummy, which closes it effectually, and then plunging the can into hot water. The heat causes the air to expand and escape with some force, when the ascending bubbles betray the leak.

The large room is devoted to the preparation of samples, boards and canvasses being painted and dried and when finished distributed as samples. Two rooms are equipped as a laboratory, and the nature and composition of the various materials used are carrefully analyzed and tested.

Several buildings comprising the greater part of the works were burnt to the ground two years ago, but were rebuilt in 48 days. The present buildings are of brick, with timber floors and pillars. The outside doors and shutters are of iron.

The works appear to be very well organized and the various shops are remarkably clean and neat and are full of many interesting mechanical devices for economizing time and labor. These works will be found well worthy of a visit from those of our readers who are large users of paint and are desirous of knowing how it is manufactured.

Rapid Feed Flooring Machines.

The demand for rapid feed flooring machines has resulted in a great many being put upon the market, none of which have been received with more favor than the one illustrated on this page. The aim of the manufacturers has been to produce a machine that would work 100 lineal feet of practically perfect flooring, ceiling, car siding and roofing per minute, *without trouble*, *annoyance* or *breaking down*, either in white pine, yellow pine or hard wood of any kind; a machine that can be used for making patent siding, beading or even molding at a reduced feed. A glance at the cut will readily impress one of its great strength and power. The gearing both in method and construction is decidedly new. No levers or links are employed thus doing away with the trouble and annoyance of breaking links. Both upper and lower main heads are of steel and slotted on all four sides. The feed is very powerful and positive, and consists of six 9-inch heavily geared rolls. The rolls are held down by steel springs capable of standing a pressure of seven tons, and so arranged that more or less pressure can be given them by turning a hand wheel. All the feed rolls are provided with scrapers, which enables them to run in the gummiest yellow pine without taking any dirt. The pressure-bars are of an improved character, and "hug" close on each side of the head, and are adjustable to and from it, giving the machine all the advantages of an inside molder. The side heads are made by Shimer & Co. especially for this machine. The matcher spindles run in long connected bearings; the matcher hangers are adjustable to any point across the width of the machine, thus enabling all parts of the bed to be used and worn evenly. An independent beader and a pressure-bar for the lower cylinder are placed on the machine, and when not wanted can be instantly swung out of the way.

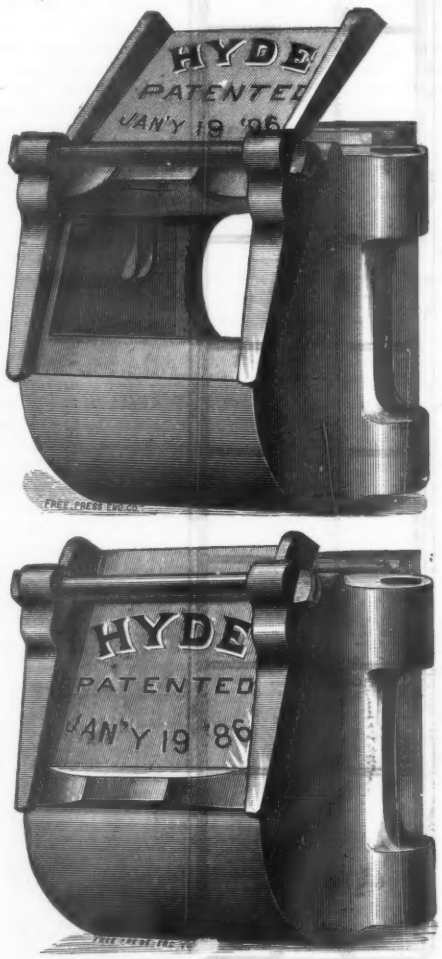
We understand that this machine has given considerable satisfaction to those who have used it. The Missouri Car & Foundry Co. have no less than six in use at their works in St. Louis and Cambridge City, and state that the machines are exceedingly satisfactory.

Any further information regarding the machine may be obtained of the Egan Co., Cincinnati, Ohio.

Hyde's Patent Axle-Box Cover.

The accompanying engravings represent a form of axle-box cover that has been lately patented by Mr. Francis Hyde, of the Michigan Car Works, Detroit, and has been used for some months on ten Blue Line cars, where, we understand, it has given great satisfaction.

The construction of the box will be easily understood from



Hyde's Patent Axle Box Cover.

the engravings, one of which shows the cover lifted and the other the cover down in place and closed.

The cover is tapered edgewise the whole length, and slides and fits into corresponding guideways cast on each side of the front of box, thereby providing large wearing surface.

This taper edgewise holds the cover close up to the face of box, making it practically tight, and thus preventing all tendency to become loose and rattle. When the cover is lifted or opened to the full height, the cover tilts over, and the lower edge takes its support naturally in the recess provide for same.

The bolt across top of box is furnished with a nut or pin. The cover can be removed by simply removing this bolt, without jacking up the car.

The following advantages are claimed for this cover:

1. The taper edgewise makes it close fitting.
2. If left open after oiling, not infrequently the case, it will soon close itself after the cars begin to move.
3. A broken cover can easily be replaced by removing the small bolt on top, and there is no need to jack up a car as in most drop covers.
4. It efficiently fulfills all that is required of a box cover.
5. It is durable and cheap; no machine work on box or cover. The small bolt is the only extra.

Mail Crane.

The mail crane, illustrated in this number, possesses the advantage over the old style box crane, in that it remains properly gauged to track, after being first adjusted, no matter how much the track may be raised or surfaced. The sills to which crane is bolted run under track, and the rails being spiked to them as to ordinary cross-ties, they are consequently raised and tamped as other cross-ties, and the crane therefore retains the same relation to the track under all circumstances. This cannot be said of the box filled with sand or stones, which is always getting out of gauge and has to be frequently adjusted. The holder has the advantage over the swinging holder, still in use on many roads, that it always stands out of the way of trains whenever it does not carry a bag.

This arrangement of crane is in use on the lines of the Cincinnati, New Orleans & Texas Pacific Railway Co., where its practical advantages have shown themselves conspicuously.

New England Railroad Club.

The regular meeting of the Club was held on the evening of the 12th inst. It was largely attended, 105 members being present. President Marden occupied the chair. He announced as the subject for discussion, Heating and Lighting Cars in Passenger Service.

Several letters were read, including one from a well-known master car-builder, stating that passengers on the New York Elevated sometimes complained of the cold; one from T. W. Peeples, M. M. of that road, testifying that after cars were once heated the amount of steam necessary to maintain the required temperature is inappreciable, and adding that a good, reliable pressure reducer is found necessary on his road; and one from H. C. McCarty, of the Philadelphia & Erie road, emphasizing the need of stoves in cars for emergencies, as when trains are stalled in snow drifts with the engine disconnected from train or disabled by a collapsed flue.

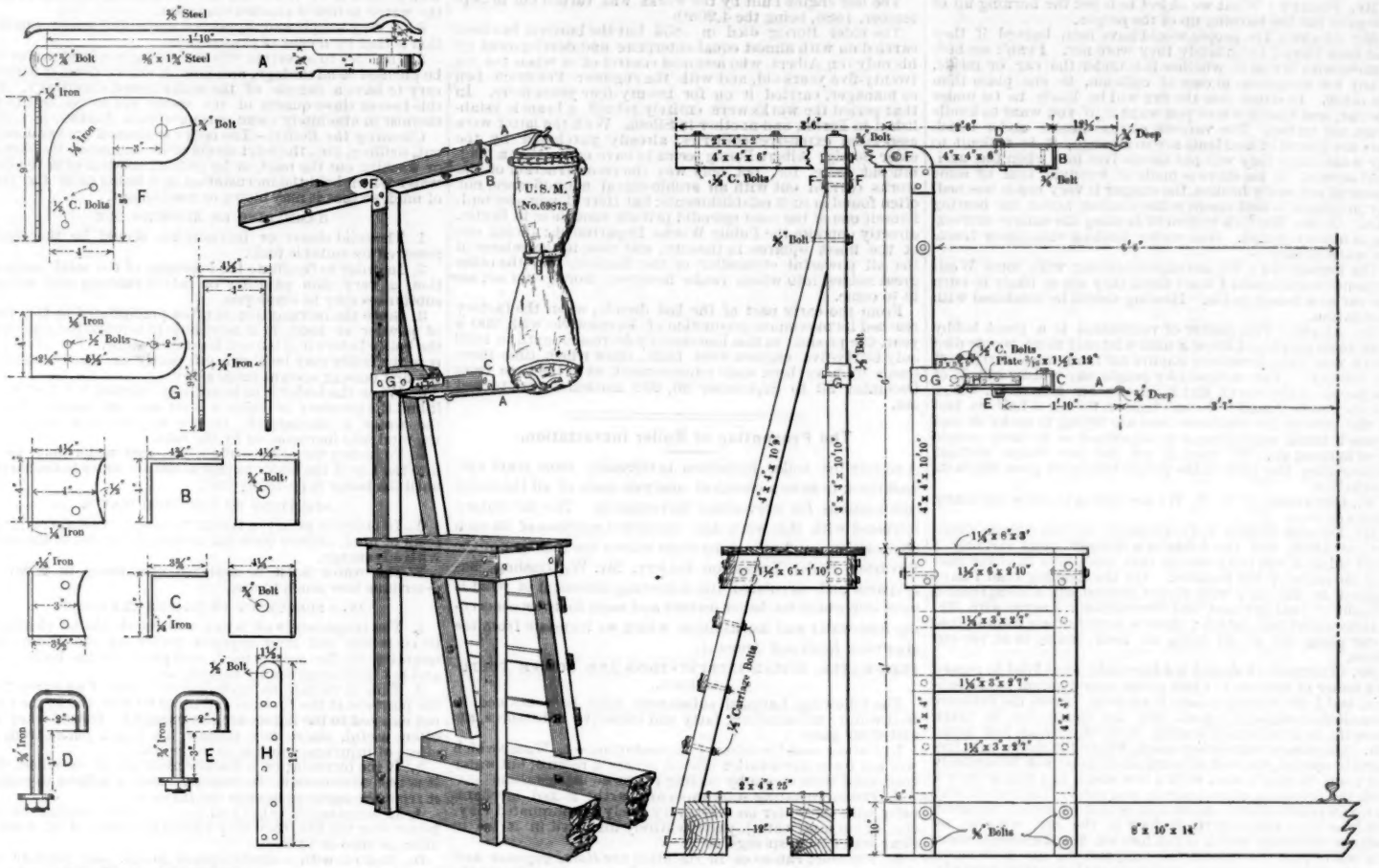
THE DISCUSSION.

Mr. J. A. COLEMAN (Providence, R. I.): I have been a steam engineer for 25 years, and have had much to do with heating mills by steam from the engine. Ample warmth for large buildings has been secured using exhaust steam, with scarcely any back pressure upon the engine. At first there was much difficulty, because the pipes were not properly arranged. The cost of heating buildings ranges from ⅝ to 4½ cents per cubic foot per year for heating and supplying power to elevators. The heating of a large building, which I fitted out in Providence, for several years cost but $\frac{45}{100}$ of a cent per cubic foot per year. In piping cars for steam heating, it might be an advantage to arrange the pipe in sections, so that the cars should be equably heated. Cannot cars be heated, from a stationary boiler before starting, by flexible tubes? We ought to abandon the old-fashioned idea of heating each car and each room in a house separately.

The PRESIDENT: It would be quite impracticable to heat the cars before starting from one point, on a road like the Fitchburg, where trains are started within three, five, fifteen or twenty minutes of each other, and the cars are no sooner back in the station than the people are ready to fill them. We have cars standing at Marlboro, South Acton, Ayer Junction, Fitchburg, Athol, North Adams and other points, and we have to provide some way of heating them; we have to meet this point, aside from the question whether the locomotive is capable of supplying steam.

Mr. LAUDER: We know that in Europe, as a general rule, they do not heat their cars, but closed iron or copper vessels filled with hot water are provided to keep the passengers feet warm. Perhaps absolute safety in case of collisions will require us to go back to that system.

Heating by means of steam from the engine is very efficient for trains running twelve or more hours continuously—if no accident occurs or no detention from snowstorms. But it would not work well with the kind of traffic on roads around Boston. Two-thirds of the cars on the Old Colony road and its branches are out of doors at night and could not be housed and kept warm. That difficulty is overcome by the system of hot-water heating, with a heater in each car, which we have in use. The only objection is the danger in case of accident. With heaters in the baggage car there is the same danger of fire in case of collision, especially as baggage cars are next the engine, and, therefore, more exposed to danger of breaking up and scattering the fire. One of the advantages of heating cars by steam from the engine is that you can regulate and reduce or shut it off in mild weather. Our road has 150 cars fitted with hot-water heaters, the heater being en-



MAIL CRANE USED ON THE CINCINNATI, NEW ORLEANS & TEXAS PACIFIC ROAD.

closed in a room cased in sheet iron. Cars cannot be otherwise warmed ready for passengers.

Disasters and accidents on railroads that cause loss of life are exceedingly rare, when we consider the vast number of passengers safely carried, say, from Boston alone—45,000,000 last year.

MR. MARTIN: The objections to heating cars by steam are very familiar to all railroad men. If we can demonstrate that we can heat more economically, have better ventilation and give better safety, the question is whether it is of advantage enough to railroads to induce them to change their present methods. The next question is, is it possible for them to change their present methods and to meet the demands of the public? I have the testimony of several enginemen, where the experiment of heating train from engine has been tried on their roads, that they cannot perceive any difference in the quantity of steam used. The only way to manage heat satisfactorily is to have it under control, so that in mild weather you can have as little as you like. Hot-water heaters will not do this. With five pounds of high-pressure steam from the engine you can heat your cars so that in the coldest weather, in Boston, the thermometer will indicate 68 to 72 degrees in the car with all the ventilators open. All principal depots are heated by steam stationary heaters, and the steam can be used from the same source for heating cars at depots ready for starting.

Three things are to be considered—economy, ability to control the heat, and danger of freezing up. You can only succeed when you take the steam into each car and let it pass out in condensed water, without returning to your supply. In the system which I represent we run a pipe from the engine under the car, so well wrapped that the snow stands on that pipe while the thermometer indicates 78 in the car. The water goes to the lowest point; the steam is all held back by a simple arrangement, and the water let out. A car, comfortably heated and ventilated, will consume about five gallons of water an hour. A train fitted four years ago in this manner, and run ever since, has not cost five dollars for repairs, and the method has proved entirely satisfactory wherever applied. It has been found by experiment that a car, once heated in this way, can be cut off from the supply of steam, and the steam shut into it, and run 30 to 60 minutes without the passengers knowing the difference. The pipes are heated, full of steam, and it slowly condenses.

MR. COUGHLAN: I find the Baker coil has a heating surface of 53 sq. ft., and the Johnson heater a heating surface of 10¼ sq. ft. I have made one that contains 35½ sq. ft. and shall be happy to show it to any one who desires to see it.

MR. MARTIN: We transmit the steam between the cars by metal connections. In heating the cars before starting, the engine is attached to them, the steam applied, with about 30 pounds pressure, and in about ten minutes it is taken off and goes to get the baggage car, the steam is shut into the passenger cars, and very soon the engine returns, the steam connection is again made, and the cars start off comfortably warm.

MR. LAUDER: I would like to ask Mr. Martin if he has not had one of his cars freeze up on the Boston & Albany road this winter?

MR. MARTIN: No, sir. In one instance the trap was congealed, but the car was not frozen, and there was heat enough to keep the passengers comfortable. How many hot-water circulators have frozen around Boston this winter?

MR. LAUDER: We froze one out of 192.

MR. COUGHLAN: There is no difficulty in making a car heater as safe as the boiler of a locomotive if you take the proper precautions. Mr. Martin's system can be improved on, and his cars kept warm for 24 hours after the steam is cut off, by packing his pipes in acetate of soda. That substance absorbs heat very quickly, and parts with it very slowly. Heaters for separate cars are in use to-day, with a heating surface of 35 or 40 sq. ft. that will stand a pressure of 400 pounds to the square inch.

MR. R. T. WHITE, of Boston: There would be a great saving of fuel if the cars were provided with storm doors.

MR. EMERSON: I have been five years engaged in heating the Connecticut River trains, 20 out of 24 trains on that road are heated by steam. The first year we commenced with a boiler in the baggage car and found it a nuisance; it heated the car so much it was dangerous. Then we commenced heating from the engine, and have continued it right along. My plan is to have an iron car for long trains, with a boiler in it, and from that heat each way, supposing that we ever need to do so; but the system I have in practical use is to take the steam from the engine. I have a little boiler under each car, and the drip from the engine goes into that boiler, and keeps it full of hot water. There is a fire-box in that boiler, and in three minutes we have steam from it. We find that we can heat with that little boiler with one-third of the coal required for the Johnson or any other heater. We have found that 1¼ in. pipe is sufficiently large, and we never have to close the ventilators. The cars are sometimes too hot, but never too cold. We have a pipe from the round-house to the depot at Holyoke, and steam is turned on to heat the cars in the morning, and at Northampton we have the same arrangement. The connection is by hose, and in 10 to 20 minutes the cars are well warmed. We can hitch on and get the steam into three cars about as quick as a man can walk through the train. This has worked well, better than metal coupling. We use up perhaps two or three pieces of hose on each car during the winter; the cost is 75 cents each. It cost perhaps $3 to fit up a car.

MR. ADAMS: Can you utilize the old system of pipes used with the Baker heater?

MR. EMERSON: We could, but we don't think there is heating surface enough in those pipes.

MR. ADAMS: Many cars are piped under the seats.

MR. EMERSON: I don't like that, because you can't wash them.

MR. LAUDER: I rode in one of Mr. Emerson's cars the other day and there was a fog of steam coming up through the car, which obstructed the view from the windows, and I heard water dripping, which seemed to me an objection.

MR. EMERSON: We have tried various kinds of boilers. We found it was necessary to get one as safe as possible under the car. We found these small boilers, with the same water circulating round and round, made the cars altogether too hot, although the gauge did not show it; it would be from 82 to 90 with every window open; and so I piped round the top of the car. We have two valves, one leading into the circulation below, and we shut one and open the other, as required, and so govern the heat as we like, taking the steam on to the roof, on the outside, when we don't want the heat; but we keep up the circulation.

MR. CREAMER: Any of this steam-heating apparatus costs three or four hundred dollars a car; 10 per cent. of that is $30 or $40 a year, which will pay for a good deal of coal. Cars can be warmed by steam from the engine, for a quarter of the expense. Place in the end of the car a small radiator, cased with sheet iron, and then introduce fresh air, and let it circulate around that radiator and be discharged from registers. The heating and ventilation will then be combined in a very simple apparatus costing not over $120 a car.

MR. CHASE: In heating buildings I have taken the exhaust steam and heated a building two-thirds as large as this, twelve to fifteen hundred feet from the source of supply, without any back pressure at all; and it is perfectly feasible to heat any length of train, without danger of escape of steam.

MR. EMERSON: Referring to ventilation, when the ventilators are all open and the hot air is going out all the time, the cold air must be coming in, and how can there be any lack of ventilation?

MR. GOUGE: This matter was ably discussed in the M. C. B. Association by a very able man, whom I see here to-night (Mr. Forney), and he says, as near as I can recollect, "We have made one great mistake; we have been running our cars all wrong, and have never admitted any fresh air, but depended entirely upon exhausting the foul air. But we must admit fresh air to take out the foul air." Now, if you admit 1,000 feet a minute into a car, as advocated by that report, without warming it, you will find your passengers will not ride in it.

MR. FORNEY: I think if anybody will reflect for a moment upon the unspeakable agony of the people who were killed in the recent accidents, he will find sufficient reason for giving this matter his best attention. Probably none of us can realize what it must be to be crushed in a car where one is held fast, to be suffering the torture of a crushed limb, and see the fire advancing, and be aware that escape is impossible; and that was the fate of quite a number of our fellow beings in some of the late accidents. I think that the railroad men are being driven to the conclusion that the fire for heating cars must go on the outside of the car in some way or other; and if railroad men don't force it out of the car, legislatures soon will. This is not impracticable, as some will claim, but has been successfully tried (on the Reading road), and cars with the heater underneath have been run for several years. I don't think it is possible to ventilate a car in winter unless you warm the air before it is admitted. I think it would be practicable to put a stove under the car, and that the fire could be fed from the inside and the grate shaken from the inside of the car. In the Spear stove and many others there is a supply of cold air brought down inside the stove, and warmed and carried up through suitable spaces into the car. A base-burning stove, so arranged as to distribute warm fresh air through the car is practicable. I think attention should be given to the prevention of telescoping of cars in accidents, as that often leads to their taking fire. The Blackstone coupler and platform has two timbers projecting out from the end of the platform, and those on the opposite car interlock with them, so that one car cannot jump above the other, without breaking off these timbers, and the car offers great resistance to crushing, and the tendency to telescope is diminished.

MR. ADAMS: The Miller platform prevents all that the Blackstone platform does; and it is a little singular that no other road than the Chicago & Alton uses the Blackstone platform.

MR. R. H. ROSE (Pres't Maine Water Gas Co.): We have been trying the experiment of lighting the cars with gas, and have come quite as near heating them as lighting them. We have an apparatus which generates gas automatically for lighting, by a water gas process. It has been thoroughly tested and lights the car wonderfully well, and there is plenty of gas to furnish heat enough to heat the car on the circulator heater system, either Johnson's or Baker's, and the heat can be regulated or graded through the heater, and an arrangement could be made to control it in case of accident.

MR. ROSE here cited testimony tending to show the safety of his system, an acid liquid being relied upon to prevent escape of gas in case of an accident. Considering this as the first experiment of a new idea, we are much gratified with the results.

MR. LEWIS: Heating by gas is the direction in which there should be experiments. The matter has been carried farther than is indicated by the last gentleman by a Philadelphia company. Whether the gas can be generated as used, or whether it can be condensed and carried is a matter for experiment. How the safety of cars is increased by putting a furnace under the car I wish Mr. Forney would explain.

MR. FORNEY: In case of accident the truck is generally carried away.

MR. LEWIS: Are not the cars knocked on top of it?

MR. FORNEY: In case of collision, if the stove is on the outside of the car, access can be had to it; if it is on the inside, access cannot be had to it.

MR. CREAMER: It is a fact that the Reading has used this system of underground heating, and has had two cars burned up by it. The cars were thrown off the track, and were set on fire. If there had been a stove inside, the cars would not have been burned. Last fall the Reading bought 60 stoves to put inside their cars.

MR. ADAMS: This underground heating system is no new thing. It was tried by several roads 25 years ago or more. We tried it on a car on the Buffalo & Erie road, and the car took fire, and burned up.

Mr. FORNEY: What we object to is not the burning up of the *cars*, but the burning up of the *people*.

Mr. ADAMS: The people would have been burned if they had been there; fortunately they were not. I can't see how a stove with fire in it, whether it is under the car or inside, is any less dangerous in case of collision, in one place than the other. In either case the fire will be likely to be under the car, and that is where you want it, if you want to kindle it up, not on top. The various circumstances under which cars are placed in accidents are so strange, it is difficult to say what shape they will put themselves into when the accident occurs. If the stove is made of wrought iron or some material not easily broken, the danger is very much lessened. My judgment is that steam is the coming agent for heating cars. In Mr. Martin's system of heating the danger of freezing is much reduced. Hot water heaters sometimes freeze for want of care.

The PRESIDENT: We are experimenting with some Westinghouse heaters, and I don't think they are so likely to burn the car as a heater inside. Heating should be combined with ventilation.

Mr. ADAMS: This matter of ventilation is a great hobby with some people. I knew a man who said more people died every year from breathing impure air than were carried off by whisky. The anti-whisky people say whisky kills ⅞ of the people in the world, and if impure air kills more, where are they to be found? I don't believe the air is half as bad in the cars as the ventilator men are trying to make it, and I don't think ventilation is so important as to keep people from burning up. We want to get the cars warm without endangering the lives of the people before we go so much on ventilation.

Mr. CREAMER: * * * We are trying to settle too many things at once.

Mr. FOLSOM (Boston & Providence): In the Angola disaster, in 1868, and the Ashtabula disaster more recently, I don't think it was fully settled that the stove in either case was the cause of the disaster. On the Reading road I have noticed in the cars with stoves underneath a disagreeable amount of coal gas and bad ventilation. I agree with Mr. Adams about ventilation; there is plenty of air coming into a car going 35 or 40 miles an hour, sifting in at various places.

Mr. COLEMAN: I should not have said what I did in regard to a boiler in the car, if I had given more thought to the subject, and I am willing to take it all back. From the evidence given here to-night it is plain that the steam can be taken from the locomotive for heating without serious loss being felt. On an accommodation train, where the doors are frequently opened, the lack of ventilation may not be seriously felt; but on long trains, with a few stops, you will be struck with the poisonous atmosphere as you enter. The reason why so many people dislike steam heat is that by direct radiation you heat over and over the bad air in the car, whereas by indirect radiation, which is put into all fine buildings, there is a coil of pipe put into the air-box, and the air is brought into the room by registers, and you get thoroughly pure air. There is no more difficulty in carrying out that system in a car than in carrying it out elsewhere. Carrying the steam pipes along the floor does not seem to me the best method. I think the pipes as arranged in the Baker system could be utilized by putting a pump on and pulling everything through pipes. If pockets are formed when the steam is forced in, so good a result will not be attained.

Mr. CREAMER: I have ridden in cars in the day time, and in the night, where the air was abominable beyond all description. There is nothing in the world so cheap as air, nothing so easy to get into a car and so easy to get out of it. Ventilation is mechanical. Now, when you can combine the ventilation with the heating, and have your car full of fresh air without any additional expense, why on earth shouldn't you do it? I can see no objection to it. Notwithstanding what Mr. Adams says, his cars are well ventilated, and I don't believe it costs him much to do it.

Mr. EMERSON: I believe the bad ventilation is owing to bad heating; there is not heat enough to have the ventilators open.

It was decided to continue the subject to the adjourned meeting, which will occur Feb. 9.

The meeting then adjourned.

August Borsig and German Locomotive Building.

From *Glaser's Annalen* we extract the following particulars of the life and works of August Borsig, the founder of the leading German locomotive factory, which has within the past year abandoned the manufacture of railroad engines, or, at least, relegated that branch of the business to the second rank as being no longer very profitable.

Borsig was born in 1804 in Breslau, in Silesia, and, in addition to the slender education at that time given to the children of the poorer classes, learned the carpenter's trade from his father. He improved his knowledge during periods of inactivity by studying in the Breslau building school, and at the instance of the royal government in Breslau, which seems to have perceived his ability, he went to Berlin in 1823 to still further improve his knowledge in the trade school founded by Beuth.

Owing to a failure to apply himself to the kind of studies considered by Beuth the most important, he was expelled from the school, and was passing shamefacedly out of the city on his way home, when he heard the sound of the hammers in Engel's factory, near the Oranienburg gate; and like Dick Whittington, seemed to hear joyful tidings in the merry hammers, which led him to remain and try his fortune in iron.

He entered into the Engel machine shop in 1825, and rose steadily in it to the position of partner and manager in 1836.

Engel had too narrow views for young Borsig, and the latter purchased in November of that year a part of the present factory premises, his total fortune (all his own savings) being $3,750, and with the responsibility of a family, and a considerable mortgage on the premises to carry, started an independent business.

The opening of the Berlin-Potsdam Railroad in 1838 and some boastful remarks of an English engineer there present led Borsig to build a locomotive at his own works, which, although already provided with steam power, were very poorly equipped. The engine when built was not allowed a trial on the Berlin-Potsdam road owing to the English influence, but was tried successfully on the Anhalt road: so much to the gratification of the government that the Order of the Red Eagle was conferred on Borsig as an acknowledgment of his patriotic endeavors.

In the next year, 1842, Borsig built 8 engines for the Anhalt road, and at the industrial exhibition of this year he exhibited an engine with the name "Beuth," whether out of magnanimity or revenge it seems difficult to say. Though his biographer attributed it to the former, Borsig can hardly have helped feeling some malicious joy in thus associating his former depreciator with his own triumph.

By 1843 the Borsig product had reached a total of 100 engines, and in the next year alone 67 were turned out.

The 500th locomotive built in '54 was pulled out of Borsig's works and sent on its way to the purchaser by the "Borsig," the first engine built by him.

The last engine built by the works was turned out in September, 1886, being the 4,208th.

The elder Borsig died in 1854, but the business has been carried on with almost equal enterprise and development by his only son Albert, who assumed control of it when not yet twenty-five years old, and with the engineer Friedrich Beu as manager, carried it on for twenty-four years more. In that period the works were entirely rebuilt, a branch established in Berlin, and another in Silesia. With the latter were associated extensive collieries, already purchased by the elder Borsig. Albert Borsig seems to have had rather a magnificent taste, for, not only was the reconstruction of the works carried out with an architectural magnificence, not often found in such establishments; but Herr Borsig also built himself one of the most splendid private residences in Berlin, directly opposite the Public Works Department; facing one of the finest squares in the city, and close to the palaces of the all powerful chancellor of the Empire, and the other great nobles, into whose ranks however, Borsig did not see fit to come.

From the early part of the last decade, when the factory reached its maximum production of locomotives with 200 a year, the product in this line steadily decreased, until in 1879 only thirty-five engines were built, since which time there seems to have been some improvement, as in the time from December '83 to September '86, 203 machines were turned out.

The Prevention of Boiler Incrustation.

A society for boiler inspection in Germany, some years ago, undertook to have a chemical analysis made of all the secret compositions for preventing incrustation. The laboratory intrusted with this work has completed analyses of 32 such compositions, and in making these known the Manager of the Bavarian Boiler Inspection Society, Mr. W. Gyssling, has prepared and circulated the following statement of what is most important for boiler owners and users to know concerning feed-water and incrustation, which we translate from the *Austrian Railroad Journal*:

FEED-WATER, BOILER INCRUSTATIONS AND BOILER COMPOSITIONS.

The following harmful substances may be contained in feed-water: incrustating, fatty and corrosive substances, air and other gases.

I. *Nature and Varieties of Incrustation.*—1. Water which will not form incrustation seldom occurs in nature; but water condensed from steam by cooling forms no incrustation.

2. The incrustating substances are partly mixed mechanically with the water (as sand, very finely comminuated clay, etc., in running water), partly entirely dissolved in it (as in clear water from springs, etc.).

3. The chief causes of incrustation are *lime*, *gypsum* and *magnesia*, which occur in greater or less quantities in nearly all feed-water.

4. The *quantity* of incrustating substances contained in any given feed-water is not always the same, but as a rule changes with the weather.

5. The incrustating substances dissolved in water partly separated in the form of powder and precipitated as mud on heating and evaporating the water, and in part they attach themselves to the walls of the boiler as solid incrustation, the formation of which is facilitated by the gypsum in the water.

6. A special form of incrustation is incrustation *cakes*. These occur in many boilers, when the solid sheets of incrustation by the partial cooling of boiler (at night or on Sundays) cleave off in the form of sheets and splinters, which usually gather on the fire sheets, and there grow to be lumps of some size, usually very dangerous.

II. *Dangerous Effects of Incrustation.*—1. Incrustation causes the boiler-owner a series of inconveniences and expenses, as by the necessity of cleaning the boiler or purifying the feed-water, by the repairs which it occasions, by interruptions to working and losses of heat or waste of fuel, occurring in firing up, blowing off, and by the necessary cooling off of the boiler while cleaning or repairing. Moreover, incrustation may cause explosions.

2. The worst effect of incrustation consists in this, that, through the resistance to the passage of heat which it offers, it may cause an injurious overheating of the boiler plates which it covers.

3. This overheating may be the result either of solid sheets of incrustation, incrustation cakes, or deposits of mud.

4. Overheating the boiler, caused by incrustation or mud, leads to leaks at seams, rivets, stay-bolts, tube-sheets, etc., and tends to cracks at rivet holes and breakages in the tube-sheet.

5. It causes convexities and concavities in the fire-sheets and fire-boxes in the vicinity of the fire with ruptures of the boiler plates, which not infrequently result in explosions.

6. Moreover, incrustations and mud by overheating cause the unequal expansion of the boiler plates, and thus promote (besides the gradual weakening of the boiler) the sudden production of cracks, especially dangerous cracks, through the line of rivet holes, which frequently lead to explosions.

7. Incrustation and mud clog the feed pipes (especially their mouths), the water and steam-gauge tubes, cause the cracks and valves to leak, and may even be drawn into the steam-engine with the steam, increasing the wear of slide valves, pistons and cylinders.

III.—TO AVOID INCRUSTATION.

Incrustation and its injurious effects are resisted:
By the proper choice of *feed water* and *boiler system*.
By purifying the feed-water.
By cleansing the boiler.

Choice of Feed-Water and Boiler System.—1. When one can choose between different kinds of water, as spring water, aqueduct water, running water, etc., then by chemical analysis that water should be chosen which contains the least of incrustating substances and other injurious materials.

2. If different kinds of water are attainable, it is advantageous to mix them or use them alternately to avoid incrustation and corrosion.

3. All water of condensation, because it is non-incrustating should be collected and used for boiler supply.

4. If strongly incrustating water must be used without purifying, then a boiler system should be used in which all parts can be examined and thoroughly cleaned of incrustation. Boilers with narrow spaces in the interior, like tubular boilers, should be used so far as possible only with water free from incrustating substances.

5. If the boiler system permits, it is very useful to attach mud strings, mud catchers, etc., at those places where experience shows that incrustation gathers in the form of powder or mud, and special attention should be paid to the apparatus and arrangements for blowing out mud.

6. Since many kinds of water drop a large part of their incrusting materials when warmed (without boiling), it is very useful to add to the boiler a feed-water heater, in which the water may be made as hot as possible, before reaching the boiler, by the waste steam or gases of combustion.

Purification of the Feed-Water.—1. The best means of avoiding incrustation is the purification of the feed-water, which consists of removing the incrustating substances from the water before it reaches the boiler.

2. A very simple and approved method of water purification is that by means of caustic soda.

3. In order to ascertain whether any given feed water can be purified to advantage, and how it can be done, it is necessary to have a sample of the water tested chemically. For this two or three quarts of the water are to be sent to the chemist in absolutely clean, strong vessels (bottles, jars, etc.)

Cleaning the Boiler.—The boiler is cleaned by hammering out, drilling, etc., the solid sheets of incrustation; by blowing or washing out the mud, or by putting substances in the feed-water which hold the incrustation in solution or in the form of mud, so that it may blown or washed out.

HAMMERING OR BLOWING OUT.

1. The solid sheets or incrustation should be thoroughly removed by suitable tools.

2. In order to facilitate the loosening of the solid incrustation, a very thin painting or rather rubbing with suitable substances may be employed.

3. Since the incrustation is often precipitated in the form of powder or mud, it is advisable to remove the mud from the boiler before it is burned hard into stone. For this purpose the boiler may be blown off partly or wholly emptied, the first once or several times a day.

4. When the boiler is to be entirely emptied it is best to let it and the masonry in which it is set cool off entirely before the water is discharged. In this way we avoid converting the mud into incrustation by the heat.

5. To hasten the process of cooling, cold water may be let into the top of the boiler as fast as the hot water is discharged, until the boiler is perfectly cold.

ADDITIONS TO THE FEED WATER.

6. In order to preserve the incrustating substances in the form of mud, caustic soda can usually be added to the water with advantage.

7. The water must be analyzed chemically in order to determine how much to use.

IV.—FREQUENCY OF BOILER CLEANING.

1. The frequency with which a boiler should be cleaned of incrustation and mud depends partly on the quality and quantity of the water used, and partly on the boiler type, and is best determined by experience.

2. Thin incrustations, up to the thickness of an eggshell on the plates next the furnace and up to 0.06 in. thick, the parts not exposed to the flames are not harmful. Indeed they are often useful, since they protect the boiler plates from the effect of injurious substances in the water.

3. If the incrustation is thicker than above specified, then it is best to remove it. In pressing cases, it suffices to remove it from the surfaces next to the furnace.

4. If incrustation cakes and heaps of mud gather on the boiler over the fire, then they should be removed at least as often as once in 14 days.

5. Boilers with narrow spaces inside, like tubular and portable boilers, must be cleaned especially early and carefully.

6. When a boiler is used for the first time with water whose qualities are not well known, it is wise to empty it after using two to four weeks and observe *how much, in what form* and *in what places* incrustation and mud have gathered.

The same is true for every new boiler or when changes have been made in an old boiler.

Contributions.

An Automatic Crossing Gate.

No. 200 Broadway, New York.

TO THE EDITOR OF THE RAILROAD GAZETTE:

The frightful and frequently recurring accidents at railroad crossings all over the country have attracted public attention for some time, but probably never so greatly as at present. The legislatures of different states are beginning to consider the question of prevention, and recent enactments have been made requiring a great number of crossings heretofore unprotected to be protected by suitable gates.

That urgent necessity existed for this public action was conceded, but the cost of employing watchmen night and day, amounting to some $900 a year at each gate, was so great as to create a demand for some other method of protection. To meet this demand required a gate that should be simple and durable in construction, and positive in its action under all the complex difficulties of storm, ice and snow.

Mr. Morton Toulmin, of Baltimore, has for a long time devoted himself assiduously to a thorough study of these conditions, and has completed an Automatic Electro Mechanically operated gate, which has proven to be entirely practicable. By its use the roadway is unerringly closed upon the approach of the train, and as positively opened after its passage across the road, the same electric current which operates the locking and releasing device of the gate, ringing a bell at the crossing while the train is approaching and passing, the combination of the electric current with the operating mechanism rendering its action absolute whenever the train shall pass over the circuit.

Briefly, the gate is operated by a double inclined lever, placed at the outside of the rails, and depressed by the passage of the engine or cars. Acting in connection with an electro-magnet and armature, it forms a circuit breaker connected with the locking device; the normal tendency of the gate being to close by gravity, the operation is instantly effected upon contact of the circuit breaker. These levers may be located at any required distance from the road crossing that may be deemed advisable, and the gate closed any given number of minutes before the passage of the train. I shall be glad to give further information to those interested.

F. JORDAN.

The "Multum in Parvo" Time-Book.

TO THE EDITOR OF THE RAILROAD GAZETTE:

Having never seen anything of the kind in the market, I inclose a sample leaf of a time-book termed the "*Multum in Parvo*"—which has been in use on the line with which I am connected during the past year with very satisfactory results—in order not to hide my light "under a bushel."

The advantage of a completely balanced distribution of labor for a gang of (say) 20 men from day to day, and the consequent ease of making the monthly abstract for the pay-roll, will be duly appreciated

TIME BOOK.

Month of November, 1886. Men employed on General Repairs.

☞ *Enter below a complete distribution of labor performed each day.*

	NAMES.	Occupation.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	T'l hrs.	Rate.	Am'nt.
1	John Smith	Foreman	10	10	10	10	10	10	..	10	10	10	10	10	10	..	10	10	10	10	10	10	..	10	10	10	..	10	10	..	10	10	..	250	.30	$75.00
2	Peter Jones	Carpenter	8	10	10	10	10	9	..	9	10	10	10	10	5	..	8	10	10	10	15	9	..	5	10	8	..	7	8	..	5	10	..	221	.25	55.25
3	Jas. Brown	"	10	10	10	10	10	8	..	10	10	10	10	10	9	..	10	10	10	10	10	8	..	10	10	10	..	5	10	..	10	10	..	240	.25	60.00
4	Geo. French	"	9	10	10	10	10	10	..	8	10	10	5	10	10	..	9	10	10	10	10	10	..	10	10	10	..	10	10	..	10	10	..	241	.20	48.20
5	F. Kringle	"	10	10	10	10	10	9		10	10	10	....	5	10	..	10	10	10	10	10	9	..	10	10	10	..	8	10	..	10	10	..	231	.20	46.20
6	Sam'l Russ	Painter	10	10	10	10	10	5	..	10	10	10	10	10	10	..	10	10	10	10	10	9	..	10	10	10	..	10	10	..	10	10	..	244	.25	61.00
7	John Ganley	"	8	10	10	10	10	....	..	9	10	10	....	....	10	..	9	10	10	10	10	10	..	10	10	10	..	9	10	..	10	10	..	215	.25	53.75
8	Levi Trask	"	10	10	10	10	10	8	..	10	10	10	5	....	5	..	9	10	10	10	10	8	..	10	10	10	..	7	10	..	10	10	..	222	.20	44 40
9	Henry Johnson	Mason	7	10	10	10	10	8	..	8	10	10	10	10	10	..	10	10	10	10	10	10	..	10	10	10	..	10	5	..	10	10	..	238	.30	71.40
10	Oscar Long	"	9	10	10	10	10	7	..	10	10	10	10	10	10	..	10	10	10	10	10	7	..	10	10	10	..	10	10	..	10	10	..	243	.25	60.75
11	Aug. Rishton	Helper	10	10	10	10	10	10	..	10	10	10	10	10	10	..	7	10	10	10	10	5	..	10	10	10	..	9	8	..	10	10	..	239	.20	47.80
12	Peter Nelson	"	10	10	10	13	10	5	..	10	10	10	10	f	10	..	5	10	10	10	10	9	..	10	10	10	..	10	5	..	10	10	..	229	.20	45.80
13	Hans Zobel	"	10	10	10	10	10	8	..	10	10	10	5	....	10	..	10	10	10	10	10	10	..	10	10	10	..	10	10	..	10	10	..	233	.15	34 95
14	Chas. Strohm	"	10	10	10	10	10	10	..	10	10	10	....	10	..	..	5	10	10	10	10	6	..	10	10	10	..	9	10	..	10	10	..	220	.15	33.00
15	Isaac Hunt	Laborer	8	10	10	10	10	7	..	7	10	10	10	10	10	..	10	10	10	10	10	10	..	10	10	10	..	....	5	..	10	10	..	227	.12	27.24
16	Wm. Murray	"	10	10	10	10	10	9	..	10	10	10	10	10	10	..	10	10	10	10	10	10	..	10	10	10	..	5	9	..	10	10	..	243	.12	29.16
17	Jas. Anderson	"	9	10	10	10	10	5	..	8	10	10	10	10	5	..	6	10	10	10	10	5	..	10	10	10	..	10	10	..	10	10	..	228	.12	27.36
18	Geo. Palmer	"	7	10	10	10	10	10	..	9	10	10	5	5	10	..	7	10	10	10	10	10	..	10	10	10	..	10	10	..	10	10	..	233	.12	27.96
19	Jacob Long	"	10	10	10	10	10	7	..	10	10	10	....	10	10	..	10	10	10	10	10	10	..	10	10	10	..	10	5	..	10	10	..	232	.12	27.84
20	Michael Gorey	"	5	10	10	10	10	5	..	8	10	10	5	10	10	..	10	10	10	10	10	5	..	10	10	10	..	....	....	..	5	10	..	203	.12	24.36
	Total hours labor		180	200	200	200	200	150	..	186	200	200	135	155	174	..	175	200	200	200	200	170	..	195	200	198	..	159	165	..	190	200	..	4,632	Av. .195	$901.42

DISTRIBUTION.																																				
General office, repairs	These lines are left blank and are filled in as occasion may require.	20	10	....	....	....	....	..	....	....	....	....	5	9	..	10	20	15	....	....	....	....	..	10	10	8	..	....	....	..	5	10	..	104	.20	$20.80
Signals, "		10	....	20	10	20	5	..	9	10	5	8	....	..	24	15	25	10	....	....	....	..	10	10	8	..	7	8	..	5	10	..	229	.225	51.53
Stations, "		50	60	50	60	50	40	..	42	55	40	25	27	30	..	46	50	40	50	60	60	..	50	50	50	..	42	50	..	50	50	..	1,177	.18	211.86
Engine houses, "		....	30	20	25	20	10	..	8	10	20	10	15	10	..	....	10	5	....	....	....	..	....	....	10	..	10	10	..	10	10	..	243	.20	48.60
Turn tables, "		....	....	10	5	....	....	..	7	15	10	10	17	10	..	....	....	....	....	....	....	..	10	10	....	..	5	5	..	....	5	..	119	.25	29.75
Water stations, "		20	10	20	30	15	20	..	15	20	30	20	18	21	..	15	20	25	20	10	....	..	20	15	20	..	15	20	..	25	20	..	464	.165	76.56
Bridges, "		40	50	50	60	50	40	..	48	50	40	30	40	50	..	45	60	60	80	90	100	..	70	80	75	..	60	50	..	50	50	..	1,418	.191	270.82
Culverts, "		....	20	10	5	10	20	..	17	20	20	15	10	20	..	20	15	20	30	30	10	..	25	30	30	..	20	15	..	20	20	..	462	.275	127.05
Fences, "		....	....	....	....	10	5		....	....	....	....	....	9		....	....	....	....	....	....		....	....	....		....	....		....	....		24	.20	4.80
Road crossings, "		30	20	20	5	20	10	..	40	30	20	10	5	15	..	15	10	10	10	10	....	..	10	5	5	..	....	7	..	20	15	..	342	.15	51.30
Signal houses, "		10	....	....	....	5	....	..	....	....	10	10	....	....	..	....	....	....	....	....	....	..	....	....	....	..	....	....	..	5	10	..	50	.175	8.75
Total hours labor		180	200	200	200	200	150	..	186	200	200	135	155	174	..	175	200	200	200	200	170	..	195	200	198	..	159	165	..	190	200	..	4,632	Av. .195	$901.42

For the purpose of illustrating its general utility, I have assumed an example of a very mixed gang on general repairs, the foreman being particular to keep separate each class of work performed, with its proper allotment of wages, apportioning a *pro-rata* share of his own salary to each. When the entire gang is employed on a single job at the same time, as is generally the case on sections in maintenance of way, the computations are of course much simpler; the rule in such case being to divide the total amount of wages by the total number of hours worked, and multiply their amount by the summary of each allotment. I trust that some of your many readers will be interested in the investigation of this subject. VIRGINIUS.

Dec. 21, 1886.

Crossing Formulas.

JUANALPA, *East India.*

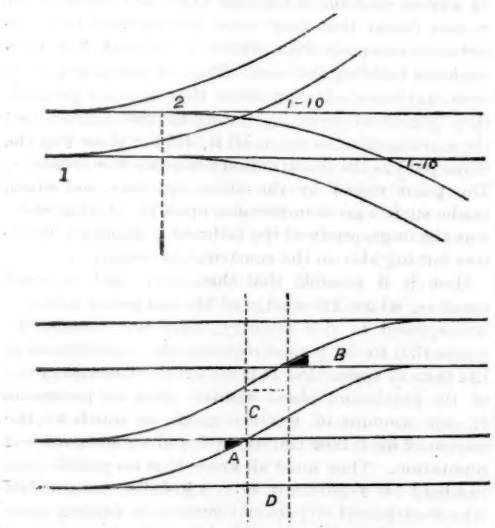
TO THE EDITOR OF THE RAILROAD GAZETTE:

In 1879 one of your correspondents gave the following simple rule for finding the distance between two frogs in a cross-over track:

$$D = S - G \times n - \left(\frac{S+G}{4n}\right)$$

in which—

D = distance between crossings (theoretical points).



S = space between lines measured from inner edges of rails.

G = gauge.

n = lead (or number) of frog, *as* 1 *in* 10.

Supposing G is greater than S, as on the broad gauge in England, can the formulæ be used in the following way:

$$D = G - S \times n + \left(\frac{G+S}{4n}\right)$$

Supposing $G = 7'\ 0\frac{1}{2}''$, $S = 6'\ 5''$ and frog 1 in 10, this would make $D = 6'\ 7''$, but instead of measuring ahead from crossing A to crossing B, as would be the case if S were greater than G, it must be measured *backwards*, or back from the nose of A as frog B would be behind frog A instead of ahead of it.

Can any of your correspondents give me a formula for putting in two sets of split switches, one just behind the *heel* of the other so as to economize space and still avoid using three-throw switches? Say if 5′ 6″, frogs 1 in 10, what would be the lead of the centre or crutch frog, and what its distance from the heel chair nearest to it? I would also be glad of a formulæ for putting in single or double slip points to facilitate shunting. Yours, INQUIRER.

Angle Bar Reinforcement.

TRENTON, N. J., Jan. 15, 1887.

TO THE EDITOR OF THE RAILROAD GAZETTE:

In Mr. J. A. Weiss' interesting paper, reproduced in your last issue, he suggests the addition of a short horizontal flange on the upper edge of the outside angle bar at its centre as a remedy against the tearing apart of the metal, which usually occurs at that point. This has already been tried on some European roads. I saw such angle bars about two years ago in the track of a road in Italy.

In that case the horizontal flange extended the whole length of the bar, and was about two inches wide. I did not learn whether it had proved to be of essential advantage.

Its adoption, however, showed me that they have found angle bars *do* break on their roads as well as on our American ones, notwithstanding Mr. Sandberg's impression to the contrary. CLARK FISHER.

Bradshaw's American Guide.

PORTLAND, Oregon, Dec. 27, 1886.

TO THE EDITOR OF THE RAILROAD GAZETTE:

Under the head of "An English Guide to the United States," you criticise Bradshaw's Guide in your issue of the 17th, and in so doing give an impression in regard to the distance and mode of travel between San Francisco and Portland that I would like to have corrected. Your article reads "Portland, Oregon, is stated to be reached from San Francisco in 29 hours, when 24 hours of staging alone is needed." Our ocean steamers form practically the only route between the two cities at present, and the time required for the trip averages from 50 to 55 hours.

Your article gives the impression that it is *necessary* to use the stages. JNO. J. BYRNE,

General Passenger and Ticket Agent,
Oregon Railway & Navigation Co.

Elevation of Curves.

TO THE EDITOR OF THE RAILROAD GAZETTE:

In your issue of the 2d inst., in an article on "Elevation of Curves," you state that "on a 6° curve, to be elevated 3 in. and a passenger speed of 50 miles per hour, the net excess of centrifugal force is 248 lbs. per ton, or the flange pressure is increased from the normal 500 lbs. per ton to 748 lbs. per ton, whereas with 3 in. more super-elevation it would only be increased from 500 lbs. to 646 lbs. per ton. Thus the higher elevation appears to be an advantage both to passenger and freight trains."

The late E. B. Orne, in a paper addressed to Frank Thompson, Vice President Pennsylvania Railroad, wrote as follows:

"Centrifugal force, in rounding curves on railways only affects trains which are moving rapidly and acquire momentum by high rate of speed; but in long freight or coal trains where the speed is, say, 10 miles an hour, gravity overcomes centrifugal force, and the efforts of the train to straighten itself out, in connection with gravity, caused the train to hug the inside or smaller circle of the curve.

"The coning of the wheels only increases the trouble: the difference between the large and small periphery of a 33 in. coned wheel being rather more than one inch, therefore in a train of 150 four-wheeled coal cars, 300 of the wheels are on one side of the train running on the smaller periphery and on the longest curve, and 300 wheels are running on their larger periphery and on the shorter side of the curve. Hence it is apparent that in each revolution of these wheels there are 300 in., or one inch to each wheel, that is slipped (or lost motion), and with 630 revolutions of a 33-in. wheel to a mile of curved track there are 189,000 in., equal to 15,750 ft. of lost motion per mile."

This paper was referred to Theo. N. Ely, Superintendent of Motive Power, who reported as follows:

"I think there is no doubt as to the accuracy of your statement, as many times we have proved by experiments that slow rates of speeds on curves elevated for high rates of speeds cause the wheels to hug the inner rail."

The editor of the London *Engineer*, in the issue of May 4, 1883, commenting on John Mackenzie's paper "On Resistance on Railway Curves as an Element of Danger," says:

"Experience leads us to feel that fixed wheels on parallel axles answer, on the whole, very well; but it must be admitted that were it not for the effect of custom and were the subject approached anew, with unfettered ideas, any engineer would be inclined to say that either loose wheels must be employed, as they are on traction engines, or radiating axles must be used."

Now, here is the solution of the whole difficulty: Axle with independent—not loose—wheels, each wheel being free to rotate the distance required of it without dragging its mate. If radial axles can be used with independent wheels, then curve resistances will be reduced to the minimum, and super-elevation of the outer rail will be no longer required.

If I am not asking too much, I shall be pleased to have your views on the above subject of independent wheels. P.

[There are as nearly as may be three times as many freight trains as passenger trains over the Pennsylvania Railroad, in addition to which the freight trains are very much heavier. If, then, the freight trains hug the inner rail and only the passenger trains the outer rail, we should expect to find the inner rail by much the most flange-cut. As a matter of fact it is not flange-cut at all, but worn dead flat on top, and often with a projecting burr on each side of the head. We do not know how old may be the quotations given above, but we think there must be some mistake about them, as one has only to go to the nearest sharp curve in any yard, however slow the speed and high the super-elevation, to find that the flanges do in fact stand some distance off from the inner rail if the gauge is wide enough to permit them to.

As to the alleged advantages of loose wheels the only "view" we have to express is that so far experiment has failed to show any very material reduction of resistance, while there is so material an increase in cost and mechanical complication that no such wheel has succeeded in commending itself for practical use to any great extent, so far as we know, in spite of many experiments. We doubt if any ever will, for some delicate experiments by Mr. Reuben Wells (Rept. M. M. Ass'n. 1876) which have not attracted the attention they merit, seem to indicate clearly, as does also theory, that the reduction of resistance is small. Independent wheels have been forbidden on the passenger cars of the German Railway Union, chiefly on the ground of the great liability to derailment if one wheel slides from too tight braking or from some other cause. Neither can we follow our correspondent in the claim that with radiating axles and loose wheels "super-elevation will no longer be required." Super-elevation is for quite another purpose, it strikes us, not affected by these changes.—EDITOR RAILROAD GAZETTE.]

A Baptism Under the Directory.

When the Wisconsin Central road was building its line to Chicago, in passing through one of the small Wisconsin towns the tracks were laid directly behind a Methodist church. The Methodists grumbled, but took no definite action in the matter until a tank was built so close to the church as to keep the light from the windows. Then they drew up a petition setting forth the damage that had been done, and requesting $500 with which to remove the church. The President of the road was himself a Baptist, but he was sorry for the Methodists, and when he received the petition he thought he would see if he could do something for them. In consequence, he forwarded the petition to F. N. Finney, with the request that he look into the matter and see what could be done. A few days later he was startled by having the petition returned to him with the following suggestion indorsed upon the back:

"They had better sell out to the Baptists, and they can use our tank."

RAILROAD GAZETTE

Published Every Friday,
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EDITORIAL ANNOUNCEMENTS.

Contributions.—*Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to* ALL DEPARTMENTS *of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.*

Advertisements.—*We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay,* EXCEPT IN THE ADVERTISING COLUMNS. *We give in our editorial columns* OUR OWN *opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.*

December earnings are reported this week by 37 roads, making 98 from which we have so far received reports for the month. The totals for the week and the month are:

	1886.	1885.	Increase.	P.c.
Week, 37 roads	$10,307,020	$8,973,405	$1,332,615	14.9
Total, 98 roads.....	33,830,096	30,290,816	3,539,280	11.7

The chief gains reported this week are from the southwestern roads. An unexpected gain comes from the Michigan lumber roads, two of which appear in this week's list. On the whole, the December reports have been quite as favorable as could be expected, and have shown a fair gain over last year.

It is again reported that the Pennsylvania and the Philadelphia & Reading have reached an understanding in relation to the traffic of their parallel lines from Philadelphia to Pottsville, and also on the New York business. The report needs official confirmation, but is not at all improbable. The policy of the present Reading management is evidently to cultivate friendly relations with the Pennsylvania, and not to continue the old fight.

Our editorial on the long and short haul clause of the Cullom bill gives a glimpse of what litigation will ensue under it and of the indefinite legislation which will be required to piece out the original bill. It opens the door to a new conflict of interests; on the one side the cheap producer far from the market; on the other the man near the market, but with high priced or poor land; each praying the state to give them the advantage which would have been otherwise given or not, as the interests of the common carriers, and in the long run of the public, dictated.

Among the things to be thankful for, in contrast with the terrible experiences at Republic, Mitteneague and elsewhere are the fortunate escapes from disaster which so frequently occur, and which show so forcibly the great value of the safety appliances already adopted. A case in point is the derailment on the New York, Lake Erie & Western, east of Howell's Station, Jan. 13, by which a whole passenger train of eight cars and a heavy engine, traveling at a high speed (reported as 50 miles an hour), was thrown topsy-turvey across both main tracks and some of the cars to the very edge of an embankment, and yet only one person was hurt, the baggageman being bruised by a falling trunk. The cause is given as "spreading of rails," which seems somewhat curious on a track like the main line of the Erie; but whatever the occasion of the accident, there is no doubt that faithful work in the car shops was the cause of the immunity from greater harm.

The wrecking train that cleared up the above wreck left three disabled cars standing on the main track in Middletown yard, and a passenger train ran into them, creating a still more exciting scene. The reports do not locate the blame; but the occurence is a reminder that wrecking trains require as careful a crew as any other train. When the "wrecker" is called out everybody is in a hurry, and perhaps excited, and it often happens that the first conductor available is taken, whether he be first class or fourth; and the impressing of an engineman who knows very little of the road he is to traverse is not by any means unheard of. Of course such practice invites disaster.

The summary of the Report of the Commissioner of Railroads of the state of Michigan for the year 1886, given last week, is not so good as its immediate predecessors. The recent illness of the Deputy Commissioner interfered with the regular work of the office and resulted in a number of mistakes. Some of them are quite excusable, others are not. The worst errors are made in stating the results of traffic operations, and are enough to make this part of the report almost valueless. We look in vain for a correct statement of average earnings or expenses per train-mile. The average expense per train-mile seems to have been calculated by dividing the train-mileage by the total expenses, instead of by the reverse process; making the result $1.14 instead of $0.88. The average earnings per train-mile, which were really about $1.25, are habitually stated at $1.49; but on page xii. of the report we are told that the average earnings per train-mile were $0.85½ and the average expenses $1.14. When carelessness is carried to this point, it is inexcusable.

Among the curiosities of this age of "Civilization," which has a "Journal" for its especial benefit, is the astounding *variety* of wisdom that may be gleaned from "the press" if one only searches for it. Various kinds of remedies for the evils resulting from collisions, etc., may be found on the editorial page of almost any "Metropolitan" journal (some of which we have noted); but it required a peep into the inside of one of the wisest of the wise of our popular papers to discover that the true preventive for disasters like that at Republic is to abolish single-track roads in toto. There is nothing so particularly new or original about this plan; its virtue lies in the ease and rapidity with which it could be carried out. How warmly it would be supported by Jay Gould, for instance, or by the bondholders of the Atchison, Topeka & Santa Fe, and other roads where the cost of an additional track would be so trifling.

Locomotive runners certainly evince a right motive, and one that is in too many cases totally lacking, when they make decided efforts to have switch lamps regularly and carefully attended to; but it seems rather odd to apply, as it is reported that the Brotherhood has in Michigan, to the Governor of the state for a remedy. Such a simple matter of detail ought to be reached through the railroad commissioner if any government interference were necessary; but the roads themselves certainly ought to straighten matters (where they are crooked) if apprised of the facts. This from self interest alone. We suspect that the Michigan enginemen tried to evade a disagreeable duty by shifting it to some other person's shoulders. The direct remedy is to report each individual failure of a light to the proper officer; this is a disagreeable duty, because it impairs the pleasantness of the relations between the runner and the station men; and so, if he be of a peaceable disposition he shirks it. The trouble often is with freight runners that they will risk their own lives (not to mention others') by running over switches in the dark rather than go to the trouble of making the proper report. There certainly is no lack of reliable lanterns; the trouble must be in the men who take care of them (or those who buy cheap ones).

The emigrant cars on the Union Pacific, which, as is generally known, are plain sleeping cars, are being fitted with curtains for the berths and supplied with cooking stoves, sinks for washing dishes, and other conveniences. With ocean steerage fare at $13, and luxuries like these on the western plains, no Irishman need submit to British oppression for a single day. He can emigrate to the boundless west so cheaply and comfortably that staying at home is nowhere in comparison.

Since the reorganization of the East Tennessee, Virginia & Georgia Company, 60,000 out of the 110,000 shares of the new preferred stock have been held in a solid block by what is known as the Brice-Thomas syndicate. As the preferred stock has, by the terms of the reorganization, the exclusive voting power until 1891, this block carried with it the present control of the company. This stock was first offered to the Norfolk & Western Company, but that company either thought the price too high, or was not prepared to buy, and the trade was not made. The stock has now been sold at par to the Richmond & West Point Terminal Company, which is apparently ready to buy anything in the railroad line south of the Potomac, the $6,000,000 required to be paid $4,400,000 in cash and $1,600,000 in Terminal stock at 40, which is somewhat below the present market price. The stock has brought a good price and the sellers are undoubtedly satisfied; whether it will prove a good bargain for the purchasers, and what they will do with the road so acquired is another question.

THE SENATE AND THE RAILROADS.

That a certain number of United States Senators should be found resisting the bill to prohibit members of the Senate from acting as railroad attorneys is only an outcome of the influences which got them their positions. The Credit Mobilier scandal and the later developments about presidential candidates have shown that the system of wire-pulling and caucus manipulation by which nominations to the Senate have been obtained, has demoralized the ideas of a large body of public men as to the proper relations between their public and their private affairs. Or, perhaps it would be more just to say, that the methods by which nominations had to be obtained have brought into public life men who would not have been tempted into it under a more rigid system of public morality.

If public office were regarded solely as a public trust, from which no immediate pecuniary advantage other than the salary of the office could accrue, many public men would feel, if not naïve enough to say, with Flanagan of Texas, "What are we here for?"

It is surprising, however, to find such men as Edmunds, Hawley, Hoar and Evarts upholding the propriety of a public representative acting at the same time as the agent of a private corporation whose interests he was required to pass upon in his public capacity.

What is the reputation of a judge who passes upon a suit in which he is known to be interested? We can see by the necessity felt by men of such unblemished reputation as Judges Gray and Lovell to clear themselves of the aspersion of being interested in the Telephone Co. How long would the purchasing agent of a railroad keep his place who was known to the management to be taking commissions on his purchases, unless indeed the higher officials were in complicity with him? How unfortunate it was for the reputation of some of the directors of a line backed by a great road out of Chicago some years since when it was found that they were also directors in a construction company with which a contract had been made for building the road. These gentlemen were of such unblemished reputation that it is not probable they perceived anything wrong in the matter, and the investigation, as we recall it, did not show that the value paid to the construction company was excessive. The point raised by the other directors, and which made such a great impression upon the stockholders, was the impropriety of the railroad company's directors serving also on the construction company.

How is it possible that these grave and reverend senators, whose knowledge of life and public affairs is unsurpassed in this country, have not learned the lesson that to be honest requires less watchfulness in life than to appear so. It is doubtful whether any one of the gentlemen above named values the possession of any amount of worldly goods as much as the esteem of his fellow countrymen and an unblemisbed reputation. They must all know that no public man can hold his reputation as a legislator untarnished who is suspected of personal motives in passing upon legislation. They must also know that no man can escape such suspicion who is known to have a private interest in the fate of the legislation he has a hand in.

On the other hand, how are the ultimate interests of the railroads subserved by allowing senators to stand in their pay? If it is lawful for a Senator to do this, where can the line be drawn between action of a Senator which is unbiassed and that which is biassed? If it cannot be drawn, as we think few will deny, what is to prevent the Senate in some future event becoming simply the battle-ground of two or more rival railroads, in which the road with the longest pocket, retaining the largest number of senators in its employ, will be the winner?

Good legislation—that is, judicial legislation—is in the long run as advantageous for the railroad companies as for any other class of the community. Few companies would bribe legislatures and incur the odium of so doing if they did not suspect improper influences adverse to them. The oft-quoted Massachusetts

Railroad Commission has proved in the past nearly as often a defender of the railroads as it has of the public. If it had been open to improper influence by the railroads it could not long have retained the confidence of the public, and the latter, through the legislature, would have resumed its spasmodic and very injurious interference in the management of the railroads.

It may then be to the interest of some one railroad to retain the present system, but it cannot be that of the many.

If the above be true an honest and self-respecting Senator should not enter into an engagement with a railroad or stay in its employ during his term of office, and if he does not propose doing so what objection can he find to embodying as a law the principle in which he believes?

Laws are at bottom simply statements of what the collective wisdom of the community considers to be right, and are for the guidance of those members of it who are either not wise enough or not honest enough to act as the law prescribes without having it laid down for them. The short of the matter is, you cannot serve God and Mammon, and if you do not or will not recognize this fact you should be made to.

To those who observe this rule the law does not speak and cannot be derogatory. To those who do not observe it, the sooner it is made to speak the better.

THE LONG AND SHORT HAUL CLAUSE.

Since the publication of our last issue, the Inter-State Commerce Bill has reached a point where the main question no longer is, "Will it pass?" but "What does it mean?" This question is of special importance in dealing with that section of the bill which relates to the relative rates for through and local traffic. It reads as follows:

"SEC. 4. That it shall be unlawful for any common carrier subject to the provisions of this act to charge or receive any greater compensation in the aggregate for the transportation of passengers or of like kind of property, under substantially similar circumstances and conditions, for a shorter than for a longer distance over the same line, in the same direction, the shorter being included within the longer distance; but this shall not be construed as authorizing any common carrier within the terms of this act to charge and receive as great compensation for a shorter as for a longer distance: *Provided, however*, That upon application to the Commission appointed under the provisions of this act, such common carrier may, in special cases, after investigation by the Commission, be authorized to charge less for longer than the shorter distances for the transportation of passengers or property; and the Commission may from time to time prescribe the extent to which such designated common carrier may be relieved from the operation of this section of this act."

It is quite generally agreed that this is somewhat obscure; and this is the only point about it on which there is anything like general agreement. Three radically different interpretations have been given by different writers and speakers. We can best illustrate the point at issue by a concrete case. Suppose the Boston & Albany to be receiving through freight of a certain kind which has been consigned from Chicago to Boston without transshipment; and suppose that freight of the same nature is offered at Chatham to be sent to Boston: all the circumstances, except the point of initial shipment, being as precisely similar as possible.

Does the bill mean that the Boston & Albany shall charge no more *per mile* from Chatham to Boston, than from Chicago to Boston?

Or does it mean that the total charge from Chatham to Boston shall be no greater than the Boston & Albany's *share* of the Chicago-Boston rate?

Or does it simply mean that the total charge from Chatham to Boston shall be no greater than the *total* charge from Chicago to Boston?

The first intepretation, which treats it as a crude *pro rata* law, is out of the question. The expression "in the aggregate" shuts out the idea of a mileage rate, pure and simple, and removes all danger of this severest and worst construction. But between the second and third interpretations the choice is unfortunately not equally clear. According to the construction which we put upon certain rather doubtful points, the bill becomes ruinous or harmless.

At first sight the second interpretation seems more natural than the third. "It shall be unlawful for any common carrier * * * to receive a greater compensation in the aggregate for the transportation of like kind of property etc. * * * for a shorter than for a longer distance over the same line in the same direction, the shorter being included within the longer distance." In the case supposed, what the Boston & Albany receives, is not by any means the whole Chicago-Boston rate, but only a small fraction of it; so that if the whole rate were 60 cents per hundred, the possible rate on local traffic would be reduced below 20 cents per hundred for goods of the same class. Mr. Blanchard in his able arguments against the bill, has shown in how many ways such a result would be disastrous.

But is this the true interpretation? Mr. Cullom contends that it is not: and what he says is worth quoting.

"The question that seems to trouble those who object to the section as it stands is whether the maximum thus fixed is the amount which a railroad company charges upon shipments originating at and destined to points upon its own road, or whether the maximum is the sum which it accepts as its share of a through rate upon shipments passing over its road which originate at or are destined to points upon another road. It seems clear to me that there can be but one answer to that question. In the first place, the measure of the charge that may be made for the shorter distance is the sum that is charged for a longer distance over the same line and under substantially similar circumstances and conditions. The rates fixed by a railroad company between points upon its own road are clearly rates upon one line, or, in the terms of the bill, 'the same line.' A railroad company can make and control the rates upon its own road, and the section says that in making such rates the short haul principle shall be observed. A railroad company cannot control rates over the roads of another company. But when two or more companies unite in making joint rates over their respective roads they become in the eye of the bill one line, and this section says that the short haul principle must be observed in making rates over that line, the two or more roads composing it being, within the meaning of the section, the same line so far as such joint rates are concerned. The word railroad is used throughout the bill, and the word line is used only in this section. The courts will be bound to assume that the word line means something different from the word railroad, or it would not have been used in this one instance when the word railroad would naturally have been used if something different had not been intended. The word line means a railroad or a combination of railroads. It means a route. Section 7 of the bill requires the carriage of freights to be 'treated as one continuous carriage from the place of shipment to the place of destination.' And this could not be done in the case of shipments over connecting roads, if the word used in this section was railroad instead of line. The joint through rates which are made by two or more railroad companies between points upon their respective roads are made over an entirely different and distinct line from that over which any one of the companies individually makes rates. And they are also made under different 'circumstances and conditions' from those which govern and determine rates made over a single railroad."

Now, of course, this is not authoritative. It is not like a judicial interpretation of an act in its practical application. But it is of value in going on record as the explanation of the way the bill was intended to act by the man who had most to do with drawing it up. In a really doubtful case, where there was nothing else to decide the matter, this might have some weight. At any rate, this is an utterance which is worthy of the most careful consideration.

The question turns chiefly upon the decision what constitutes "similar circumstances." There are two points of distinction which prevent the circumstances from being similar: 1. The through freight from Chicago to Boston is billed at rates made by an agent not directly under the control of the Boston & Albany 2. The through freight is received and handled in a fashion different from the local freight, and much more economical.

We cannot make so much of the first point as Mr. Cullom does. It would be quite unlike the average court to refuse to hold the railroads responsible for the acts of their agents, and the theory which Mr. Cullom suggests, if consistently carried out, would render almost all regulation of inter-state commerce inoperative. But the second point is a thoroughly good one. While it is hard to tell just what interpretation the courts will give to a vague phrase like "similar circumstances" it is pretty certain that traffic which originates on a foreign road and is passed on without transshipment will not be held to fall under the same law as that which originates at local points. The English courts have furnished a most consistent series of precedents in this respect.

This second point of Mr. Cullom's is rendered doubly strong by a clause in the bill which at first sight seems to have no immediate bearing on the question at issue:

The term "railroad" as used in this act shall include all bridges and ferries used or operated in connection with any railroad, *and also all the road in use by any corporation operating a railroad, whether owned or operated under a contract, agreement or lease.*

What is the intent of this clause? Obviously to put a series of connecting lines on the same footing as far as this bill is concerned, as one continuous line operated by a single company. It puts the New York Central route with two links from Chicago to New York on the same level with the Pennsylvania route, which is under single ownership, subjecting it to the same disadvantages, but by implication giving it the same advantages. It treats one shipment from Chicago to Boston as a unit, and makes the *whole* charge the standard, rather than the part of it which any one company may finally get. It destroys the force of one of Mr. Cullom's points, but it makes the other infinitely stronger. The circumstances are not similar in local and through freight, because one is a whole charge and the other only part of a charge, according to the definition of the bill itself.

If the short haul clause instead of saying "It shall be unlawful for any common carrier, etc.," had said "It shall be unlawful for any *railroad*," this definition of a railroad would have been all but decisive. As it stands, it shows pretty clearly that Mr. Cullom has good grounds for his interpretation of the law.

One point more needs to be noted. The fact that one of the two interpretations leads to such serious consequences as have been pointed out by Mr. Blanchard and others, is perhaps the best safeguard that the other interpretation will be adopted by the courts. Where there is as much real doubt about the meaning of the words as exists in the present case, the courts are altogether likely to choose the interpretation which leads to the least disturbance of general business. Now a construction of the act which should forbid the Boston & Albany to charge more on local traffic than its *share* of the Chicago-Boston rate, if carried out, would produce little short of a financial revolution; but if we only forbade it to charge more than the whole Chicago-Boston rate, the disturbance would be but slight. In fact, this last construction of the act simply establishes a principle which almost all companies would adopt from choice wherever they could; a principle which the best roads have already made their rule, and one which, in the long run, it does not pay to violate.

Whether there would be any chance of carrying out this idea except by the aid of that very system of pools which another clause of the bill prohibits, may be doubted. But the main evil of the bill is in the section which forbids the means, not in those which prescribe the results. If Mr. Cullom's interpretation be the true one, the only radical fault of the long and short haul clause is its vagueness. Let us hope that it may be sufficiently discussed in order that Congress, shippers and railroads may know previously what it is going to mean.

CAR HEATING: THE MITTENAQUE ACCIDENT.

The derailment of an important passenger train at the above-named place (which is West Springfield station) on the Boston & Albany road, Jan. 4, as heretofore noted, becomes prominent, not so much by the unusual circumstances attending the accident itself as by reason of its happening on a road of the highest reputation and in a state having one of the best boards of railroad commissioners, through which an intelligent investigation is sure to be had. The question of protection from fire is the principal lesson from the disaster that we shall endeavor to elucidate now; though the article on the Republic disaster in our last issue was not without its bearings on this case; and, on the other hand, what we have to say here is equally applicable to the Ohio catastrophe. There are two other considerations which we will briefly mention, though not by any means deeming them unimportant or deserving of being retired for any length of time by reason of the fact that the more horrible phase of the matter just now absorbs all minds. We refer to the crushing of the forward cars in collisions by the overpowering weight of heavy sleeping cars in the rear; and to the especial danger connected with the tender in passenger trains, from the fact that no person rides upon it. One of the few sensible utterances in the daily papers on this general theme is the New York *Times'* article of Jan. 9 mentioning the prevalence of the practice of placing the heaviest cars at the rear of the train, but suggesting a remedy which will be somewhat amusing to railroad men, to wit, the placing of the sleepers next to the engine. So long ago as Jackson collision on the Michigan Central, and in the Rio disaster and many lesser ones before and since, the danger in placing old, or weak, or light cars in the front portion of a heavy train was vividly illustrated, and the warning ought not to need repetition. A road whose business is important enough to demand "limited" trains and to require them to run a mile a minute certainly can afford to have strong and heavy cars for the whole of such trains. A baggage car can be made equally strong with the remainder of the train; and although trainmen and other occupants of the forward car ought to take risks in preference to putting them upon the passengers, there is no justice in protecting the latter by so hazardous a device as the placing of the employés in an egg-shell that is almost sure to be crushed. In regard to the tender, it may be said that this is by no means the first instance of a wheel running on the ground for a considerable distance before being discovered. Most readers will recall similar cases in their own experience. All other vehicles in a passenger train should, and generally do, have one or more persons upon them who will notice unusual and dangerous sounds and stop the train; and the inventor who can devise a simple automatic arrangement to warn the engineman whenever the tender bumps up

and down more than it should, would seem to have just now a good opening to bring himself forward.

The quality and soundness of the axle we shall not here speak of. The Commissioners' investigation showed that it was made by a reputable firm, whose treasurer testified that his man in charge of the work had had 19 years' experience, was an expert, and was unfettered by any limitation in price. The best "railroad scrap" iron was used, and the axle had not run so long as its fellows under the same tender.

But the grave question concerns the heating problem. On this the public demands positive and visible action. To be sure the demand is no more anxious or pressing, perhaps, than it was after Angola in December, 1867, or after the Ashtabula bridge (December, 1876); but the growth of the country and the increase of railroad travel really do give much additional urgency, in view of the added light now shed upon the matter by more perfect inventions, and by the frequency during all these years of lesser catastrophes which railroad managers had no right to forget, whatever carelessness the general public may have been guilty of. It is poor comfort also, to reflect that there are others worse than we. Quite recently, in Sweden, a moving train caught fire from an overheated stove, and the passengers went frantic in their attempts to stop the train without a bell rope; but our lesson even in this case is not a particularly complacent one; let us rather look to the appliances we already have, and see if they are, as recently stated by an old superintendent, so clumsily arranged that in long trains it is only with difficulty that enginemen can be signalled by them.

Everybody acknowledges the evil of fire in cars; everybody looks to steam heat for relief from the danger; and yet positive progress seems unreasonably slow; and great diversity of opinion is found regarding the nature of the obstacles in the path. Prominent railroad officers are not wanting who claim that locomotives cannot spare the steam, that cars waiting at way stations to be attached to trains cannot be heated, that each particular device has its peculiar weakness, and various other objections; but the logic of events certainly tends very strongly to overthrow these arguments, and to compel the railroad presidents to fall back upon their old argument, still cherished by many an officer in secret, whether he avows it or not, that the expense is unwarranted. Notwithstanding these things, however, human life *is* paramount to money, and the public will, in the long run, uphold the roads in acting up to that principle. Two bills have already been introduced into Congress looking to government laws on the subject, and the railroads will do well to bestir themselves if they desire the privilege of settling the problem unhampered by crude legislation.

That locomotives can furnish the required steam is almost or quite proved by the experience of the few roads already using the Gold, or Martin, or some other plan, and by the evidence that heat can be stored for a considerable time. One street railroad uses steam which comes wholly from stationary boilers. This proof is positive on the storage question, so far as it goes. But even if locomotives were to suffer, the master mechanics are not by any means unequal to the task of making engines with larger proportionate boiler capacity. The question of heating cars before they are attached to the train is not a very large one. Any town large enough to furnish a carload of passengers for a single train, or even half that, is of enough importance to have the station heated by steam; and this station boiler could supply cars with the greatest ease, after the plan used by various roads in supplying gas. Cars need not be attached to trains so frequently as they are. Well-managed roads habitually haul cars 25 to 50 miles or more simply to save the time and trouble of switching them out. It would be no more wasteful to haul them empty for convenience in heating.

But why extend such simple arguments? The old defenses, poverty, and the law of averages, are the real draw-backs. Public opinion is now certainly in a mood to justify the expense, even to the point of raising fares (or keeping up those that ought otherwise to be reduced). The law of averages is no defense whatever. To illustrate: The Eastern Railroad had the Revere disaster in 1871. In all probability the next score or next hundred similar cases will occur on some other road. Is that any warrant for relaxing of vigilance on the road named? And yet, but for this principle, and the beliefs founded on it, many an officer would be wild with anxiety who is now comparatively at ease.

Some secondary points are worthy of note. Wrought-iron steam heaters in passenger cars are of little service in a collision if the baggage and other cars at the front have common cast-iron stoves, as at Mitteneague. There must be fire in the engine, at least for many years yet; but the double boiler-iron fire-box is generally pretty successful in confining the hot coals. Illuminating oil of 300° fire-test is comparatively safe, the lights being very likely to go out from a sudden shock; but the incandescent electric light can be resorted to if there be any doubt whatever. Axes, etc., are good and should not be left out, as a patron of the New York Central complains is done on that road in violation of law; but in these late disasters we see that nobody had the time, or perhaps the presence of mind, to use them.

Since the above was in type, we have received the report of the meeting of the New England Club in Boston, and give considerable space to its presentation elsewhere. This discussion is valuable and timely, and tends strongly to settle some doubtful points. We notice in it some fallacious reasoning, as for instance the appeals to the law of averages; and the main issue was too much obscured by undue stress upon the ventilating and telescoping questions. A man in a burning car takes mighty little interest in the fact that forty-five millions, or ten thousand millions, of other people have ridden into the Hub of the Universe in safety; and the press and the legislatures will invariably side with the one sufferer rather than with ninety and nine just persons, etc. As Mr. Adams intimated, the public will submit to being suffocated by foul air for some time yet, if we will only remove the one horrible possibility that now fills their minds. Telescoping should, of course, be guarded against to the utmost possible extent; but in a collision of trains going so fast as that one at Republic was going, or at 40 miles an hour, as *both* trains were running in the instance on the Fitchburg road a few years ago, *something* is going to be crushed; and even with cars built like a gunboat, very few people would wish to experience such shocks with a fire in the car.

The testimony in regard to the ample supply of heat from the new devices (the ventilators having, it is claimed, been left wide open in cold weather), and the statements concerning the heating of cars from stationary boilers at Holyoke and Northampton (Mass.) are particularly noteworthy.

The Railjoint of the Future.

Mr. Weiss, in the paper published in our last number, "Why do Angle Bars Break," speaks of shear, as if it were essentially a different strain from tension and compression. Possibly the author speaks of it simply as conventionally used to indicate reverse flexure, which is what it really is. It is to be feared that the name shear has led to a good deal of loose calculation of the strains due to reverse flexure, the same allowance being frequently made for the strain per square inch of section of bolts and rivets irrespective of the distance between the centres of the parts united by them.

What the author means by the expression in the first part of his paper, "I mention it as inferentially disposing of the assumption in the calculations of the rail being a girder with fixed ends," does not seem clear.

The author's mention of the fact that in certain European experiments the joint gave no more deflection than the main rail when the joint-tie spacing was 0.8 that of the general tie spacing, and von Weber's experiments, showing that the joint-tie spacing for equal strength with a given splice should be 0.6 of the ordinary spacing, show what is becoming pretty well known, that the defects of the bar and angle splice do not lie generally in inherent weakness where the tie spacing is satisfactory, but in badly proportioned bearing surfaces or in unsymmetrical resistance to strains.

The Fisher joint certainly remedies the defect of bearing surface, but whether this is sufficient to counterbalance the objections made to it on other grounds, remains to be seen.

Some of these are: the necessity of cutting out the tie or sinking it lower into the ballast, involving either imperfect hold for the spikes or inferior drainage of the joint ties as compared with the others; the unfavorable theoretical position of the metal, as a beam—in being in the main a flat plate, the small webs being entirely unprovided with any top flange, a defect which it has in common with most angle splices.

The devices used for taking up slack in the joint fastenings appear to be successful in preventing noise so far as any public statement of experience has been made, but it would seem as if carelessness in the maintenance would lead with the iron base under the rail to what a prominent New England railroad manager used to call the "clickety click" of the old iron chairs.

What the joint of the future is to be is one of the "burning questions" of the day, and the GAZETTE will welcome the fullest expression of opinion on the subject by railroad men.

We have had few communications on the breakages of splices with supported joints, of the angle bar, plain bar or other types, and should be glad to receive sketches, however rude, bearing on this variety of joint. These sketches should, for the purpose of information, give the cross-section and side view of the splice, which could be done most easily by simply laying a piece of paper against the end or side of the splice and tracing the outline and the position of the bolts with a pencil.

December Accidents.

Our record of train accidents in December, given on another page, contains brief accounts of 65 collisions, 46 derailments and 4 other accidents; a total of 115 accidents, in which 35 persons were killed and 129 injured.

As compared with December, 1885, there was a increase of 41 accidents, and of 4 persons killed, but a decrease of 24 in the number injured.

These accidents may be classed as to their nature and causes as follows:

COLLISIONS:		
Rear	46	
Butting	16	
Crossing	3	
		— 65
DERAILMENTS:		
Broken rail	5	
Broken or defective frog	5	
Broken switch rod	1	
Broken bridge	3	
Spreading of rails	5	
Broken wheel	5	
Broken axle	3	
Broken truck	1	
Accidental obstruction	1	
Cattle on track	1	
Runaway train	1	
Misplaced switch	6	
Unexplained	9	
		— 46
OTHER ACCIDENTS:		
Boiler explosion	2	
Broken parallel rod	1	
Broken axle not causing derailment	1	
		— 4
Total number of accidents		115

Nine collisions were caused by failure to use signals promptly; four by trains breaking in two; three by fog; two by snow; two by misplaced switches; one by a car left standing on main track.

All three of the broken bridges reported were wooden trestle bridges.

A general classification of these accidents is made as follows:

	Collisions.	Derailments.	Other.	Total.
Defects of road	..	19	..	19
Defects of equipment	4	9	4	17
Negligence in operating	50	6	..	62
Unforeseen obstructions	5	3	..	8
Maliciously caused	..	..	..	..
Unexplained	..	9	..	9
Total	65	46	4	115

Negligence in operating is thus charged with 53.9 per cent. of all the accidents; defects of equipment with 14.8, and defects of road with 16.5 per cent.

A division according to classes of trains and accidents is as follows:

Accidents:	Collisions.	Derailments.	Other.	Total.
To passenger trains	8	16	2	26
To a pass. and a freight	19	..	..	19
To freight trains	38	30	2	70
Total	65	46	4	115

This shows accidents to a total of 180 trains, of which 53 (29.4 per cent.) were passenger trains and 127 (70.6 per cent.) were freight trains.

Of the total number of accidents 70 are recorded as happening in daylight and 45 at night.

The number of casualties resulting from the different classes of accidents was as follows:

	Killed.	Injured.	Total.
In 65 collisions	21	68	89
In 46 derailments	9	59	68
In 4 other accidents	5	2	7
Total, 115 accidents	35	129	164

Nineteen accidents—11 collisions, 6 derailments and 2 others—caused the death of one or more persons each; 35 accidents—22 collisions and 13 derailments—caused injury but not death. This leaves 32 collisions, 27 derailments and 2 others—61 accidents in all, or 53 per cent. of the whole number, in which there was no injury to persons serious enough to be recorded.

The killed and injured persons were divided as follows:

	Killed.	Injured.	Total.
Employés	31	78	109
Other persons	4	51	55
Total	35	129	164
Per cent. of employés	88.6	60.2	66.5

December shows, like several previous months, a large number of collisions, considerably over one-half of all the accidents having been of that class.

The total number of accidents in the four quarters of the year just closed, with the number of broken rails, were:

	1886.			1885.		
	Total.	Broken rails.	P. c.	Total.	Broken rails.	P. c.
First quarter	273	23	8.4	447	67	15.0
Second quarter	234	10	4.3	218	8	3.6
Third quarter	341	4	1.2	258	8	3.1
Fourth quarter	363	8	2.2	293	19	6.5
Total	1,211	45	3.7	1,217	102	8.4

With very nearly the same number of accidents, the year just closed shows considerably less than half the number of broken rails that appeared in 1885. Over half of these were in the first quarter of the year.

For the year ending with December the record is as follows:

	Accidents.	Killed.	Injured.
January	94	40	90
February	98	21	157
March	81	49	131
April	66	23	105
May	93	23	170
June	75	33	86
July	91	23	88
August	115	31	117
September	135	42	148
October	118	48	106
November	130	33	106
December	115	35	129
Total	1,211	431	1,433
Total, same months, 1885	1,217	397	1,530
" " " 1884	1,191	389	1,761
" " " 1883	1,040	473	1,913

The yearly average for the four years was 1,315 accidents, 393 killed and 1,659 hurt; the monthly average for last year were 101 accidents, 33 killed and 119 injured.

The averages per day for the month were 3.71 accidents, 1.13 killed and 4.16 hurt; for the year there were 3.32 accidents, 1.10 killed and 3.93 injured.

The average casualties per accident were, for the month, 0.304 killed and 1.122 hurt; for the year, 0.331 killed and 1.183 injured.

The averages for the month were thus somewhat above those for the year in the number of accidents and also in the number killed and injured.

Receipts of Flour, Wheat and Corn.

The receipts of flour, wheat and corn at the four Atlantic ports, New York, Boston, Philadelphia and Baltimore, during 1886, according to the Produce Exchange Bulletin, were as follows:

	Flour. Bbls.	Wheat. Bushels.	Corn. Bushels.
New York	5,780,498	41,546,610	32,789,951
Boston	3,547,5 2	2,784,223	8,687 908
Philadelphia	928 [illegible]94	7,539,331	4,004,448
Baltimore	1,961.832	12,348,927	14,991.15[illegible]
Total, 1886	12,0 8,445	64,218 094	60,57[illegible],457
Total, 1885	11,818,934	38,564,004	70,945,15[illegible]

While the total receipts of corn at the four ports during 1886 were about 10,000,000 bushels less than the receipts for 1885, the receipts of wheat were about 25,000,000 bushels more in 1886 than in 1885. The wheat receipts in 1885 were, however, much smaller than the receipts for any other year since 1877. The flour receipts for 1886 were about 200,000 barrels more than the 1885 receipts.

For purpose of comparison the following tables are presented showing the total annual receipts of flour, wheat and corn, respectively, at the four ports during the ten years ending with 1886 and also in percentages the receipts of each article at the respective ports.

FLOUR.

Year.	Total receipts of the four ports. Bbls.	Percentage of each port of total receipts. New York.	Boston.	Philadelphia.	Baltimore
1886	12,018,445	46 4	29.5	7.8	16.3
1885	11.818.934	50.7	26.4	9.5	13 4
1884	12,1[illegible]1,920	49.8	30.7	9 6	9.9
1883	[illegible]2,251,578	51.5	30 1	9.9	9.4
1882	11 420,529	5[illegible].8	26.8	9 3	12.1
1881	10,570. 53	54.2	25.[illegible]	9 1	11.5
1880	10,3[illegible]9,923	52.1	2[illegible].3	9.0	12.6
1879	10,360.120	54.4	22.6	8.1	14.4
1878	8,092.017	54 4	20.4	11.4	13.8
1877	7 445,545	49.5	25.0	10.0	15[illegible]

It will be seen that the receipts in 1883 have only been exceeded twice during the ten years—in 1883 and 1884. Also that while the total receipts had risen from 7,445,545 bbls. in 1877 to 10,570,153 bbls. in 1881, there has been no such marked increase in the last five years.

The relative receipts at New York in 1886 were less than during any other year, being only 46.4 per cent. In 1877, the New York receipts were 49.5 per cent. of the total receipts, the next year 54.4 per cent. and since that time, excepting 1884 and the past year, have always been considerably over 50 per cent. of the total receipts,

The receipts at Boston were relatively larger in 1886 than during any of the other years, with the exception of 1883 and 1884; being 29.5 per cent. of the total receipts in 1886, and 30.1 per cent. in 1883 and 30.7 per cent. in 1884.

In 1886 Philadelphia flour receipts were relatively lower and Baltimore receipts relatively higher than during any preceding year.

The combined receipts of New York and Boston as compared with the receipts of Philadelphia and Baltimore have been as follows, expressed in percentages of total receipts:

	1886.	1885.	1884.	1883.	1882.	1881.	1880.	1879.	1878.	1877
N. Y. and Boston	75.9	77.1	80.5	81.6	78 6	79 4	73.4	77.0	74.8	74.5
Phila. and Balt	24 1	22 9	19.5	18.4	21.4	20.6	21.6	23.0	25.2	25.5

WHEAT.

Year.	Total receipts of the four ports. Bushels.	Percentage of each port of total receipts. New York.	Boston.	Philadelphia.	Baltimore
1886	64,218,094	64.7	4.3	11.8	19 2
1885	38,564,004	63.1	4 4	10.7	21.8
1884	62,119 076	59.4	3 2	8 8	28.6
1883	51,385 142	52.7	3 7	10.2	3[illegible]4
1882	72,811.747	61.6	4.5	9.3	24.6
1881	77.155.316	57.5	4.5	10.9	27 1
1880	1 4,950,286	51 7	3.4	13.2	31 7
1879	131,795.915	54.1	4 4	15.2	26.3
1878	101,2[illegible]0 242	62.5	3.9	11.8	21.8
1877	28,[illegible]59,418	65.0	5.3	10.5	19.2

The total wheat receipts of the four ports are larger in 1886 than they have been in any year since 1882, but are much less than in 1882 or any preceding year since 1877. New York's percentage of the wheat receipts is larger in 1886 than it has been in any other year since 1887. While Boston receives an important portion of the seaboard receipts of flour, it receives but a very small percentage of the wheat, being only four or five per cent. of the total receipts of the four ports. Philadelphia's percentage (11.8) of the wheat receipts in 1886, is greater than its percentage for any year since 1880. In that year its percentage was 13.2 per cent., and in 1879, 15.2 per cent. The percentage of Baltimore (19.2 per cent.), was lower than in any year since 1877, and very much less than its percentage for any year from 1879 to 1884, inclusive.

The combined wheat receipts of New York and Boston as compared with the two Southern ports has been relatively as follows, expressed in per cents:

	1886	1885	1884	1883.	1882.	1881.	1880.	1879.	1878.	1877.
N. Y. and Boston	69.0	67.5	62.6	7[illegible]4	66.1	62.0	55.1	58.5	66.4	70.3
Phila. and Balt	31.0	32.5	37.4	43.6	33.9	38.0	44.9	41.5	33 6	29 7

CORN.

Year.	Total receipts of the four ports. Bushels.	Percentage of each port of total receipts. New York.	Boston.	Philadelphia.	Baltimore.
1886	60,573,457	54.1	14.3	6.8	24.8
1885	70 945 156	53.9	12 1	11.5	22.5
1884	39,231,166	49.8	23.1	9.0	18.1
1883	67,151.061	53.1	18.0	11.4	17.5
1882	30,910,146	54 5	22.1	12.4	11.0
1881	9[illegible]2 9,526	49.8	16 0	17.4	16.8
1880	118,779,270	51.4	13.6	21 0	14.0
1879	95,[illegible]95,401	44.9	11.7	19.1	24.3
1878	9[illegible]123,300	43.0	11 2	25.9	19.9
1877	77,424 849	45.2	9 5	17.9	27.4

The total receipts of corn at the four ports in 1886 were less than the receipts for any other year during the last ten years, with the exception of 1882 and 1884, when the receipts were only about one-half the usual amount. During the last ten years, the relative receipts at New York only exceeded those of 1886 once. In 1882, though the total receipts of that year were only 30,000,000 bushels, as against 60,000,000 bushels in 1886, New York's percentage was 54.5 per cent. as against 54.1 per cent. in 1886. Though the percentage of Boston in 1886 (14.3) was higher than its percentage in 1885 (12.1), it was lower than any other year since 1880. In 1884 its percentage was 23.1; in 1883, 18.0, and in 1882, 22.1. The percentage of Philadelphia in 1886 was 6.8 as against 11.5 in 1885. The decrease in Philadelphia's percentage of the total corn receipts has been very marked. In 1880 its receipts were 21 per cent. of the total receipts of the four ports; in 1881, 17.4 per cent., and in 1882, only 12.4 per cent. The receipts at Baltimore in 1886 were 24.8 per cent. of the total; a higher percentage than it has received since 1877, though in 1879 its percentage was 24.3. In 1882 its percentage was only 11.0 per cent.

The following shows, in per cents, the relative corn receipts of New York and Boston as compared with the receipts of Philadelphia and Baltimore during the last ten years:

	1886.	1885.	1884.	1883.	1882.	1881.	1880.	1879.	1878.	1877
N. Y. and Bos.	68.4	66.0	72.9	71 1	76.6	65.8	65 0	56 6	54.2	54.7
Phil. and Balt.	31.6	34.0	27.1	28 9	23 4	34.2	35.0	43.4	45 8	45.3

The aggregate annual receipts of flour, wheat and corn at the four ports for the ten years ending with 1886, and the percentage of each port are as follows:

Year.	Total receipts of the four ports. Bushels.	Percentage of each port of total receipts. New York	Boston.	Philadelphia.	Baltimore.
1886	178,874.554	55.6	15 3	8 9	20.2
1885	162,684,364	55.0	14.9	10.7	19 4
1884	155 853,882	53 6	17 9	9.1	19 4
1883	173,668,304	52.5	17.6	10.3	19.6
1882	155,114,273	56.9	15 4	9.9	17.8
1881	216 960.530	53 5	13.9	13.3	19 3
1880	280,529 209	51.7	11 5	15 8	21.0
1879	273,811 455	5[illegible].9	10 0	15.4	23.7
1878	230,052,753	53.5	9.5	17.3	19.7
1877	149,189,220	51.2	12 0	14 2	22.6

As will be seen, the total receipts of the four ports in 1886 were somewhat greater than the receipts of any other year since 1881, but very much less than the receipts in that year, or in 1878, 1879 or 1880. The relative receipts of New York in 1886 are larger than any other year except 1882, though only six-tenths of one per cent. greater than in 1885. The percentage of Boston in 1886 is slightly higher than in 1885, but lower than the percentage of either the three preceding years. Philadelphia's percentage was smaller in 1886 than during any previous year, though only two-tenths of one per cent. lower than its percentage in 1884. Prior to 1882, Philadelphia received a much larger percentage of the seaboard grain, its percentage of the total receipts of the four ports being as follows during the five years previous to 1882: in 1881, 13.3; in 1880, 15.8; in 1879, 15.4; in 1878, 17.3; in 1877, 14.2 per cent. Though the percentages of Baltimore have not varied much in the last few years, its percentage in 1886 (20.2 per cent.) was higher than its percentage for any year since 1880.

The following is a statement of the combined per cents. of New York and Boston of the annual aggregate receipts of flour, wheat and corn at the four ports during the past ten years, as compared with the receipts of Philadelphia and Baltimore for the same years:

	1886.	1885.	1884.	1883.	1882.	1881.	1880.	1879.	1878.	1877
N. Y. and Bost.	70.9	69.9	71 5	76.1	72.3	67.4	63.2	60.9	63.0	63.2
Phila. and Balt.	29 1	30.1	28 5	23.9	27 7	32 6	36.8	39.1	37.0	36 8

Provision Exports.

The December exports of pork products were about 16,000,000 pounds more than the exports for the month of November, and a little over 12,000,000 pounds greater than the exports for December, 1885. The bacon shipments were 3 8 per cent. less than in 1885; but there was a large increase in the exports of hams, pork and lard. The value of the exports last month was $7,207,081; and in December, 1885, $6,248,015, an increase of 15.3 per cent.

The following statements show the exports of each class of pork products for the month of December in both years:

	1886.	1885.	Inc. or Dec.	P. c.
Bacon	46,544.279	48,371.488	D. 1,827,209	3.8
Hams	6,475,763	4,329,160	I. 2,146,603	49.6
Fresh and salt pork	9 649,031	7 735,603	I. 1.913,428	24 7
Lard	35 407,495	25,309,[illegible]19	I. 10,097.976	39.9
Total pounds	98,076,568	85,745,770	I. 12.330,793	14.4
Value	$7,207,081	$6,248,015	I. $959,066	15.3

While the increase in lard exports was not so great as during November, when they were 98 per cent. greater than in November 1885; still there was an increase of 39.9 per cent. over the exports in December, 1885.

The export of pork products in the month of December during the last ten years has been in millions of pounds:

1877.	1878	1879.	1880.	1881.
99 8	131.9	113.4	154.5	104 0
1882.	1883.	1884.	1885.	1886.
90.1	87.4	96.0	86.2	98.0

It will be seen that the exports in December, 1886, were larger than during the same month in any year since 1881, when they were 104 million pounds.

The total exports of pork products for the year were 54,000,000 lbs. greater than for 1885, and the exports for the last ten years have been as follows in millions of pounds:

1877.	1878.	1879.	1880.	1881.
738.8	1,138.0	1,176.1	1,334.1	1,020 1
1882.	1883.	1884.	1885.	1886.
660.0	768 7	635.2	705.8	849 3

Thus last year's exports have been larger than any year since 1881, but much less than in 1881, or the two preceding years.

The exports of beef products in December were 15.6 per cent. in quantity and 24.9 per cent. in value less in 1886 than in 1885, as shown below:

	1886.	1885.	Inc. or Dec.	P. c
Fresh beef	8 018,144	11,273 395	D. 3,255 251	29.0
Salt beef	3 553,811	3,562 875	D. 9 064	0.3
Tallow	2,993,821	2.491.326	I. 1,502,495	60.3
Butter	945,259	1 054 371	D. 109,[illegible]12	10.4
Cheese	1.875,156	3 407,708	D. 1.532,552	45 0
Total pounds	18,[illegible]6,191	21,789,675	D 3,[illegible]03,484	15 6
Value	$1,426,491	$1,899,976	D. $473,[illegible]85	24.9

There was also exported in December 4,743,606 pounds canned beef, valued at $360,631; the quantity exported in December, 1885, was not reported, but it must have been about the same as this year, as the value is stated as $293,401.

The values of the exports of beef, pork and dairy products for December and for the calendar year have been:

	1881.	1882.	1883.
December	$12 987 325	$1 ,071,422	$10,844 952
Year	133,3[illegible]2,417	96,934,4[illegible]3	114,2 8 956
	1884	1885.	1886.
December	$11,[illegible]33 701	$8 474,880	$8,994,2[illegible]3
Year	96,449 142	93.713,0[illegible]0	93,559,516

The total value for December was about 5 per cent. greater than in 1885, but much less than in either of the previous years. The total value for the year was less than in any of the previous years.

The exports of live cattle for the year were:

	1886.	1885.	Decrease.	P. c
Number	141,794	1[illegible]5,[illegible]10	23,516	17.4
Value	$10,3[illegible]7,696	$13,132,959	$2,815,263	21.5

The decrease in value was thus considerably greater than in number.

Grain Exports.

The month'y advance statement of the Bureau of Statistics gives the value of the exports of breadstuffs for the month of December as $13,045,346. This report covers about 98 per cent. of the breadstuff exports from all ports of the country The value of the exports this December is about $3,000,000 more than in December, 1885; but about $1,000,000 less than the value of the breadstuffs exported in December, 1884.

We give below a statement of the December exports for the last seven years; also for the six months and for the twelve months ending with December of each year:

Breadstuff Exports for Seven Years.

Bushels:	December.	Six mos. to Dec. 31.	Year.
1880	17,924 029	164,227,847	293 419,124
1881	32,581,924	107,322,795	227,443 843
1882	15,405,[illegible]55	102,970 997	160. 49 323
1883	12.555,020	90,368,292	175,317.2 9
1884	18,162,083	88,747,483	164,767,480
1885	13,991,[illegible]60	68,006 475	168,209,867
1886	15,905,527	95,629 063	190 558,113
Value:			
1880	$18,626,243	$153 580.174	$275,836,859
1881	13,8[illegible]0,1[illegible]8	1[illegible],137,645	224,1[illegible],560
1882	17,087,790	117,822,556	182 678,865
1883	12,941,693	87,543 245	172,692,180
1884	14,[illegible]61,542	79,700,507	1[illegible],813,403
1885	10 117,242	52 998,732	129,757,260
1886	13,045,346	78,260,454	148,122,020

The exports of wheat and wheat flour during the first six months of 1886, were 55 million bushels; and during the last six months, 76 million bushels; making a total of 131 million bushels for the year. In 1885, the wheat and flour exports amounted to 57 million bushels in the first six months and 38 million bushels in the last six months, aggregating for the year, 95 million bushels.

The wheat crop of 1886 was 453 million bushels; that of 1885, 357 million bushels; and of 1884, 513 million bushels. The exports for the last half of the year are governed by the crops of 1886, and are about double that of the last six months of 1885; but it must be remembered that the exports for the fall of 1885 were extremely light, the bulk of the exports of the 1885 crop not being made until after the end of the year.

The corn exports were 56 million bushels in 1886, or about 6 million bushels less than the corn exports for 1885. While the wheat and flour exports are about 30 per cent. of the total wheat crop, the corn exports are only about three or four per cent. of the total crop, but it must be borne in mind that while flour, a product of wheat, is included in the wheat exports, provisions, etc., which may be considered as largely the product of corn, are reported separately.

The barley exports were 1,190,000 bushels in 1886, and in 1885, 245,000 bushels. There were exported in 1886 only 880,000 bushel of oats against 5,800,000 bushels in 1885.

The comparison so far has been in relation to quantities.

The value of the wheat and flour exports was $119,000,000 in 1886; and in 1885, $92,000,000; or an increase of about

30 per cent. in valuation in 1886 over 1885. The increase in bushels in 1886 over 1885 was 37.8 per cent. Consequently, the average price per bushel was less last year than in 1885, being for wheat and flour 91 cents per bushel last year, while in 1885 the average price was 96 cents.

The value of the corn exports was $26,800,000 in 1886, and $32,900,000 in 1885, being a decrease in 1886 as compared with 1885 of $6,100,000, or 18.5 per cent. The decrease in quantity in 1886 as compared with 1885 was only 10 per cent. The average price per bushel in 1886 was 48 cents, and in 1885, 53 cents.

December Grain Receipts at New York.

The flour and grain receipts at New York in December, 1886, were 537,000 bushels less than the receipts in December, 1885, being 9,066,289 bushels last month and 9,603,563 bushels in December of the preceding year.

The December receipts at New York for the last ten years have been as follows:

Year.	Bushels.	Year.	Bushels.
1877	8,157,083	1882	10,278,964
1878	8,393,551	1883	6,783,189
1879	10,327,856	1884	8,481,130
1880	9,256,069	1885	9,603,563
1881	5,438,034	1886	9,063,289

While the receipts in 1886 were less than the receipts in December, 1885, they were considerably larger than those of the corresponding month in 1884, and about one-third greater than the receipts in December, 1883. The receipts in December, 1879, 1880 and 1882 were larger than those of last year, but those of 1877, 1878 and 1879 were less.

We have not shown separately the December receipts by rail and by water during the last ten years, for the reason that the canal receipts for December are usually extremely small, navigation closing in November, and the receipts merely being shipments that had reached Troy in that month, but did not arrive at New York until December.

As will be seen from the following statement, the new roads brought a larger proportion of the flour and grain to New York than they did in December, 1885:

	1886.	1885.	Inc. or Dec.	P. c.
N. Y. Central	2,236,515	3,831,993	— 1,595,478	41.7
Erie	1,533,188	2,504,656	— 971,468	38.8
Pennsylvania	767,682	1,148,639	— 380,957	33.1
Lackawanna	817,430	589,387	+ 228,043	38.7
West Shore	2,195,261	548,488	+ 1,646,773	300.3
Other	1,027,149	140,625	+ 886,524	630.4
Total rail	8,577,225	8,763,788	— 186,563	2.1
Canal	376,500	497,200	— 120 700	24.3
Coastwise	112,564	342,575	— 230,011	67.1
Total	9,066,289	9,603,563	— 537,274	5.6

Expressed in per cents. of total receipts for the month, the receipts by the various roads in 1886 compare with those of 1885 as follows:

	N. Y. C.	Erie.	Penn.	Lack.	W. S.	Other.
1886	24.7	16.9	8.5	9.0	24.2	11.3
1885	39.9	26 1	11.9	6.1	5.7	1.5
	Total rail.	Canal.	Coast.	Total.		
1886	94.6	4.2	1.2	100		
1885	91.2	5.2	3.6	100		

The increase or decrease in the percentages of the respective routes in 1886 as compared with those of 1885, is as follows:

N. Y. C.	Erie.	Penn.	Lack.	W. S.	Other.	Total rail.	Canal.	Coast.
−15.2	−9.2	−3.4	+2 9	+18.5	+9.8	+3.4	−1.0	−2.4

The three old lines (N. Y. C., Erie and Penna.) carried 50.1 per cent. of the total receipts in 1886, and in 1885, 77.9 per cent. The largest increase of any road was that of the West Shore, which carried 24.2 per cent. last month and only 5.7 per cent. in 1885. The N. Y. Central and West Shore together carried 48.9 per cent. last month, against 45.6 per cent. in December, 1885. The Lehigh Valley brought more grain to New York last month than it has ever done in any one month before. It must have carried between 9 and 10 per cent. of the total, a slightly larger proportion than that carried by either the Lackawanna or the Pennsylvania.

It is reported that the Pennsylvania Railroad contemplates trying a few miles of permanent way laid in the present English fashion: bull-headed steel rails, with heavy cast-iron chairs, the ties being spaced further apart than is usual here, only some 2,000 being used per mile. The trial is likely to be interesting, especially if steel ties on Mr. Webb's plan are used on part of the trial track.

Our enterprising contemporary *The Sanitary Engineer and Construction Record* has in its last issue a well illustrated article on the Natural Gas development of Western Pennsylvania, giving a map of the region and cuts showing the manner of sinking wells, and the details of pipe connections, and of combustion apparatus.

Reticence about accidents and detentions is made the subject of considerable hue and cry in the New York city papers, who take as their text the blockade on the Elevated road last week. Much of the argument is misdirected; the superintendent of a railroad of course cannot stop to talk with reporters when he is busy clearing the main track; he is even warranted in driving them away. General Manager Hain is accused, by implication, of having instructed his stationmen to refuse to give information; but it would seem more reasonable to call him to account for *not* instructing them. It is easy to imagine circumstances wherein a conscientious ticket-seller would naturally refrain from telling passengers about actual or prospective delays for fear he should give deceptive or misleading information. He generally *knows* but very little about obstructions at stations other than his own, and if he tells anything he does not actually know he may very soon get into trouble; some passenger will make estimates on his opinions (mixing up facts and opinions), get left, and then swear. On a road with such an unwieldly multitude of passengers as the Elevated has, it would seem well to have from headquarters some well-defined rules to be observed in answering inquiries in times of irregularity of trains, so that every one should be everywhere treated alike. *Some one* can say whether a blockade is likely to last 30 minutes or half a day; and this some one ought to instruct the station agents uniformly. The redemption of tickets or carrying of passengers free under suspension of rules should be the subject of regulations which could be put in force by a brief telegram. True facts affecting the convenience of passengers should, so far as known, be given out; to postpone their promulgation offends patrons as badly as to lie to them.

A crossing collision occurred at the Chatham Square station of the Elevated road in New York City, Jan. 19, a Second avenue train bound south crashing into the front corner of the first car of a Third Avenue train bound north, but without hurting any one, the speed being low. It would seem that the south-bound enginemen must have passed the danger signal, as the most approved form of interlocking apparatus is in use at this point. The sensible requirement that *both* the engineman and the fireman must see the signal at such places and tell each other that it is "all clear," before proceeding to foul the crossing, apparently is *not* in force on the Elevated.

The more detailed reports of the testimony taken at the inquest on the Republic disaster received since our last issue confirm the conclusions we then drew. A civil engineer has taken measurements which show the curve to be such an easy one that the passenger runner might have seen lights for 2,000 ft. or further ahead of him, so that if the freight had even a poor headlight even the fastest train ought to have been brought to a standstill, or very near it, before colliding. The testimony gives very positive evidence that the engineman of the freight was stupefied by liquor. It is quite apparent that the freight conductor had not enough force of character for a position of that kind, for there seems to have been some talk between the trainmen about protecting the train, and the conductor weakly submitted to being overawed by the engineman's surliness. A contemporary refers to the fact that various roads have issued strict temperance regulations to the "employés," but have omitted to give them the moral support of temperance in the higher ranks. Empty wine bottles thrown out of directors' cars tend strongly to neutralize the effect of teetotalism on paper.

A contemporary speaking on the multiplicity of duties required of agents at small stations, says, after mentioning the insufficiency of the average pay, "it is strange that men can be found who will assume such fearful responsibilities at any price." It is not strange at all. Aspirants for these places do not realize the burdens they are assuming until they have saddled themselves with them. It may be strange that they continue in such places after they have experienced the wearing nature of the life they impose. It is strange that men will follow the sea after hearing of such a wreck as that on the coast of Virginia lately; but the strangest thing of all is that prosperous managers will place such unduly heavy burdens upon station agents as many of them do. There is a good deal of room for more extended application of the golden rule on railroads in this respect.

An esteemed contemporary feels badly because a certain cultured general manager in Boston terms smoking cars "hog-pens," and rather pokes fun at ladies who endure their husbands' smoke at home, but turn up their noses when they by mistake enter a "smoker." Our e. c. does not catch the point. The hog-pen idea, so ably set forth by James Parton, is founded not so much on the smoke and the pollution of the air, as upon the filthiness of the floor and appurtenances. The chewers really cause more trouble than the smokers; a car filled with both classes is, after a hundred mile trip, really an object of loathing not only to ladies but to gentlemen as well. We cannot say that the expectorators all, like Davy Crockett, persistently avoid the spittoons (beg pardon; cuspidores); quite likely the cars do not generally have a sufficient supply of these receptacles.

Record of New Railroad Construction.

Information of the laying of track on new railroad lines in 1887 is given in the current number of the *Railroad Gazette* as follows:

Chicago, Kansas & Nebraska.—Completed to a point thirty miles southwest from Horton, Kan., an extension of 14 miles.

Missouri Pacific.—A branch of this company's *Topeka, Salina & Western* line has been extended south to Sterling, Kan., 15 miles.

Southern Pacific.—The new *Coast Line* has been extended 9 miles northwest of Newhall, Cal.

This is a total of 38 miles for the week, making 43 miles reported thus far for the current year. The new track reported to the corresponding date for 16 years has been:

Miles.	Miles.	Miles.	Miles
1887 43	1883 37	1879 ..	1875 33
1886 15	1882 39	1878 ..	1874 32
1885 12	1881 47	1877 ..	1873 ..
1884 27	1880 62	1876 24	1872 22

This statement covers *main track only*, second or other additional tracks and sidings not being counted.

NEW PUBLICATIONS.

A pocket map is issued by the Chicago, Milwaukee & St. Paul Railway, which is large enough to show the stations on the whole road distinctly and at the same time is small enough to admit of being spread out and examined conveniently in one's lap while sitting by a car-window, has an advantage over most advertisements of the kind in that it has a substantial stiff cloth cover (2¼ × 4¼), so that it can be conveniently carried in the pocket. The usual fashion of putting the map on the inside of a folder measuring about the same as an eagle's wings from "tip to tip" is exceedingly unsatisfactory, for if the passenger be at all geographically inclined he finds his sheet worn out and useless long before he completes his journey or has one half mastered the "lay of the land."

American Society of Civil Engineers' Annual Meeting.

The meeting was called to order at 11 a. m. Wednesday, Jan. 19, and Mr. C. E. Emery was unanimously called to the chair, on nomination of past President J. B. Francis.

The annual report of the Board of Direction made the following statement:

There has been an addition of 114 to the membership of the Society, and a loss by death, transfer, etc., of 16, making a net addition of 91 during the year. The total number of persons connected with the Society at the beginning of the year is 1,019.

The annual Convention of the past year was held at Denver, Colorado, early in July.

There has been a much larger number of pages of the Transactions and Proceedings of the Society issued during the past year than in any previous year in the history of the Society.

The Committee on Standard Time presented a report, which report referred to the twenty-four hour system of notation which was last summer adopted upon over 2,600 miles of the Canadian Pacific railways, and the result of the experiment has shown that railroad men consider this new system of notation of the greatest advantage in operating railways, and also that business men are inclined to accept it with great readiness. The Canadian Pacific Railway Co. has determined to adopt the 24-hour system permanently on their division of the line, and the next time-table issued will have that notation from Ottawa and Toronto to the Pacific Coast. It is understood that a number of other railways are seriously considering the adoption of this system in the near future, and the Manitoba & Northwestern and the Northwestern Coal and Navigation Co. have already done so.

The Norman Medal and the Rowland Prize, presented for papers of special merit during the year, were awarded respectively to Mr. Edward Bates Dorsey for a paper on English and American Railways Compared, and to Mr. Charles C. Schneider for a paper on the Cantilever Bridge at Niagara Falls.

The report of the Board of Direction referred to the fact that a large number of applications had been received for membership in the Society from engineers in various foreign countries, and it was suggested that some modification of the constitution of the Society might be made providing simpler means for enabling engineers in foreign countries to join the Society.

Various invitations for visits to different engineering works were extended to the members and guests for Friday, Jan. 21.

The following ticket for the management of the Society for the coming year was declared elected, as the result of a letter ballot:

For President, William E. Worthen.

For Vice-Presidents, Thomas C. Keefer, Thomas F. Rowland.

For Secretary and Librarian, John Bogart.

For Treasurer, J. James R. Croes.

For Directors, William G. Hamilton, Charles C. Schneider, Stevenson Towle, James Archibald, Robert Forsyth.

After a comfortable lunch in the Society's rooms, the afternoon was passed in a discussion on the prevention of pipe corrosion, in which the chief points developed were the excellent effect in this respect of riveting on pieces of zinc to the outside of wrought-iron pipes and the fact that cast-iron pipes laid in dry sand in Philadelphia had remained for 52 years entirely free from corrosion, while the same pipe line where it passed through gravel fell to pieces shortly after being removed.

The Society was to meet again at 20-30 o'clock to listen to a discussion on structural tests of steel, accompanied by the exhibition of a large eye bar broken as a test for the Hawksbury bridge.

Foreign Technical Notes.

A rack railroad is projected up the Dachstein the most southeasterly of the higher Austrian Alps, commanding a magnificent view of the eastern portion of Styria and the Tyrol.

It is hoped at St. Petersburg, writes a correspondent, that the new Russian Minister at Teheran, Prince Dolgoroucky, will at once make it clear to the Shah that Russia could not allow English or American contractors to construct the Persian railroads which are about to be made. The first and principal Persian railroad must have its terminus somewhere on the Central Asian Railroad, and Russia must be enabled to control the Persian railroad administration. "Russia must, if necessary, offer her material support or her guarantee to the Persian government." Special measures will have to be taken to prevent European manufactures from passing the Russian frontier under a false Persian flag, as is the case now, thus taking advantage of the small duty which is levied on Persian manufactures, according to the old Russo-Persian convention.

The Schwartzkopff safety apparatus recently illustrated by us has been very extensively applied and proved very efficacious, as shown by the following statistics furnished by the inventor to Glaser's Annalen. By 930 of these attachments already in use there have been 450 correct indications of a dangerous condition of the boiler. How many of these have been with the same boiler is not stated, but it is clear that a large minority of the boilers to which it has been applied have been in a dangerous condition at some time since its application.

Herr Schwartzkopff opposes the argument that has been made in favor of fusible plugs. These, it is claimed, are simpler than his apparatus, and not only indicate danger but avert it by extinguishing it. They are, however, liable to a failure to act effectively by the plugging of the hole produced by dirt or incrustation, and are at best a clumsy contrivance, in view of the flooding of the engine room with hot water

which must take place, and the total interruption to the work of the boiler. The remedy may also, in certain cases, be nearly as bad as the disease.

Culvert Pipe.

Our attention is called to the use of stoneware pipe for railroad culverts by a little pamphlet issued by Blackmer & Post, who make a specialty of pipe for this purpose. They began making this pipe in 1878, and have increased their sales from 11,538 feet in that year and 31,564 in the following one, to 95,294 feet in 1886, with an aggregate production of 471,674 feet, or over 89 miles, showing the appreciation this pipe has met with.

It is an admirable material for culverts if properly used, up to the 24 inch size, which is the maximum of the above makers; but there is a prejudice against it in the minds of many engineers, which we are convinced is mainly due to imperfect laying.

If the pipe is once properly laid, and the ends suitably protected, it needs no further care, and is practically indestructible. If, however, the ground under it is not carefully fitted to the shape of the pipe or if it is laid on a yielding soil or under a heavy bank without suitable allowance for settlement; or if care is not taken to use good material—preferably gravel—for the first foot of filling over it, the pipe is liable to be displaced from the true grade and suffer from freezing of the water retained in it, or even entirely broken up. Further more, if the ends are not suitably protected by sheet piling or face walls, the end pipes are liable to be broken by frost or a blow from a rolling stone; the end lengths are covered up by the earth from above or washed out by a heavy flood, and the pipe is blamed for what was really the fault of the laying.

Blackmer & Post have increased their standard length this year from 2 ft. to 2 ft. 6 in., and use an extra heavy and long hub, the latter being one-sixth of the diameter in length.

THE SCRAP HEAP.

Railroad Young Men's Christian Association.

The Association at Columbus, O., reports for December a total of 1,568 persons at its rooms, of whom 1,034 used the reading room and 534 were attendants at religious services. The four Sunday services averaged 115 attendants, and the average number present at five cottage meetings was 15. The library and reading room are in improved condition, and are well used by members.

Big Fall in Leather.

Bang! Ye Gods! What is it? Is it still another soul-harrowing collision, and are we about to be telescoped into eternity with the dust of a day's travel in our ears? Something struck, surely, and struck hard.

"Ladies an' gemmen, yo' need have no fear. De ingine am still on de track, an' nuffin am destroyed 'cept one dozzing cuffee cups in de buffet. But dat lady from Cheecaggo in upper 7 will please lower down her udder shoe on a rope."

A Narrow Escape.

The Caspar Lumber Co. in Mendocino County, Cal., has on its logging road a trestle 680 ft. long and 142 ft. high. Recently, as a train was passing over this trestle, a car loaded with about 300 redwood ties (which weigh about 6 lbs. to the foot, making 20 to 25 tons on a four-wheel car) broke an axle while on about the middle of the bridge. There are no guard rails on the bridge and the ties are spaced 1 ft. apart. The derailed car tipped over and 15 or 20 ties slipped off and fell to the ground, 140 ft. below, breaking 10 by 12 in. longitudinal timbers of the trestle off like pipe-stems. The coupling parted and the rest of the train went on, leaving the car hanging cornerways across the bridge, with a brakeman on top of it. This may fairly be called a narrow escape. The car had been loaded by the parties owning the ties, and was too heavily loaded.

They Want the Earth on Wheels.

The Chicago *Mail* blandly inquires: "Is'nt the ordinary Pullman coach good enough for a railroad President, for a General Manager or Chief Engineer?" It would scarcely seem so from the record, for "of the 20 or 30 western and northwestern roads each one has from $60,000 to $100,000 invested in palace cars for the gratification of general officers or to tickle the pride of their women folks." Several presidents of roads have special cars valued at $30,000 each. The stockholders don't get much benefit out of a rolling palace of this sort. Perhaps there are $5,000,000 on wheels among all the roads of this continent that draw no interest whatever. It is probable that the royal coach for Great Britain's Queen is a wretched "fourth floor back" in appearance as compared to the gorgeous drawing-rooms that skim over the 60-pound steel rails of America bearing the luxurious persons of General Manager So-and-So or President What's-his-name.

Storm in England.

A recent issue of the London *Times* gives an extensive account of "one of the most fierce, sudden and disastrous snow storms on record" that has just passed over Great Britain. In London a steam tramway line became obstructed by snow about 10 o'clock on a Sunday night, and before any information could be sent 13 engines with their cars became stalled and all travel interrupted till late the next day. In America, 8 or 9 inches of snow on a level would not exactly astonish the natives, but over in the land of ale and Yorkshire pudding, it seems to the "chappies" like a ghostly harbinger of the day of judgment.

Maine Lines.

In the picturesque, rock-bound state of Maine there are no less than 20 well-defined schemes in the field at present for the construction of new railroads. Actual work has begun on 15 of these. The extraordinary epidemic is said to have been provoked by the Canadian Pacific, which is now pushing across the northern part of the state. It would seem advisable for contractors to direct their scientific attention toward the well-watered land of Neal Dow, as a slight change from the unceasing incorporative activity of Kansas.

Attempt at Train Wrecking.

A dispatch from Albuquerque, N. M., Jan. 19, says: "An attempt was made Monday night to ditch the east-bound passenger train by pulling the rail-spike near San Jose, a small station 90 miles west of Albuquerque on the Atlantic & Pacific road, with a view, it is thought, of robbery. Fortunately, however, the passenger train was three hours behind the schedule time, and a freight engine running ahead of the passenger struck the loose rails and turned completely over. The engineer and fireman escaped by jumping. The culprits are supposed to be an organized gang of train robbers, which the authorities have for some time been looking for. They are well armed, and have been lurking in this vicinity for several weeks. The trainmen and express messengers have for some time been carrying shot-guns for this gang, expecting an attack at any moment. A sheriff's posse, accompanied by a Wells-Fargo express detective, have started in pursuit."

An Explosion in a Baggage Car.

A Pittsburgh dispatch of Jan. 19 says. "An intense excitement was created among the passengers on the limited express west on the Pennsylvania Railroad last night by an explosion which occurred in the baggage car. When the train reached Harrisburg a trunk of ordinary size was placed in the baggage car, and the baggage-master, Henry Mengus, of Philadelphia, put it to one side. Just as the train was approaching Duncannon station, Mengus asked his assistant to help him put the trunk on top of some other baggage. The moment it was thrown up a terrific explosion occurred, the trunk being reduced to splinters and the contents scattered in every direction. The roof of the car was also shattered, and a hole was knocked through the side. When the train was stopped, it was found that Mengue had sustained an ugly cut on the head, and that he had also been hurt in the breast.

"There was quite a panic among the passengers, every person supposing that an attempt had been made to wreck the train with dynamite. An examination of the trunk showed that there had been dynamite cartridges in it, but all had been exploded. Mengus was carried to Altoona, and from that point sent home to Philadelphia.

"Word of the occurrence was sent to headquarters in Philadelphia, and instructions received here to arrest the person who presented the check for the trunk. This morning an Hungarian, who gave his name as John Kagman, called for the trunk. He was immediately arrested and is still in custody. He said he had been at work at Hazleton, Pa., and was on his way to the Monangahela regions in search of work. He denied having any cartridges in his trunk, but finally admitted that he had some for blasting in coal mines. Mengus is said to be fatally injured."

A Duel in a Stock Car.

On the morning of Jan, 18 in a stock car on the Louisville, Evansville & St. Louis road a singular and fatal combat took place between an Alderney bull and a Norman stallion. The two animals were boxed in a car at Depauw, Ind., by Gustavus Edenburg, a local dealer, for shipment to Louisville. A strong partition was built between the two animals and the car was attached to the local freight. The train was running near New Albany when a brakeman, passing over the car, heard a furious bellowing beneath, and climbing down the side of the car found that the petition between the two animals had been broken down and the infuriated brutes were engaged in deadly conflict.

The train was stopped and the crew gathered around the car, but no means could be devised for stopping the encounter. The iron heels of the game horse were planted with telling effect upon the bull's head, and the horse was gored in a horrible manner. Finally the stallion got in a blow between the eyes of the bull, and the latter animal fell dead. The combat lasted 35 minutes. The horse died four hours later.

As Usual.

"About that accident up the road this forenoon!" said the reporter as he was ushered into the office of the railroad president. "I understand that there were four killed, six or eight badly hurt, and two locomotives smashed up."

"Yes, young man, y-e-s. You may say in your paper that last month's showing of this road is expected to be a large increase in earnings over the previous one. Good day."—*Wall Street Daily News.*

TECHNICAL.

Locomotive Building.

The Taunton (Mass.) Locomotive Manufacturing Co., is building two 17×24 engines for the Old Colony road.

The Old Colony shops have just completed two 18×24 in. cylinder passenger locomotives, and have two more of the same pattern under construction. This road is also building three 17×24 switching engines at the Boston shops.

The Schenectady Locomotive Works have delivered 5 new freight engines to to the New York Central & Hudson River.

The Cleveland, Columbus, Cincinnati & Indianapolis Co. last year built in its shops two ten-wheel freight locomotives for the road.

The Brooks Locomotive Works in Dunkirk, N. Y., are building 2 passenger, 6 Mogul freight and 2 switching engines for the Cleveland, Columbus, Cincinnati & Indianapolis road.

The Rhode Island Locomotive Works in Providence have just completed an anthracite-burning passenger engine for the New York, Providence & Boston road.

The Car Shops.

The shops at Lima, Ohio, heretofore owned by the Ohio Car and Manufacturing Co., have come under the control of the La Fayette Car Works, of La Fayette, Ind. Machinery and buildings are now being put in order and new machinery is being added to give a capacity to produce 15 box cars per day. The business of the Lima shops will be conducted and directed from La Fayette, where all correspondence should be sent.

The car shops of the Old Colony road are being devoted this winter to the rebuilding of old passenger cars. The cars are receiving new floor timbers, new roofs of the monitor pattern and new inside finish. The old-fashioned cast-iron stoves are to be replaced by the Johnson heater, this road already having 192 of these heaters now in use.

The Wason Manufacturing Co. is building at the shops at Brightwood, Mass., 13 passenger coaches for the Old Colony, 15 for the Boston and Maine and 4 drawing-room cars for the Boston & Albany road.

The Litchfield Car Co. in Litchfield, Ill., is building 600 box cars for the Cleveland, Columbus, Cincinnati & Indianapolis road.

The Cleveland, Columbus, Cincinnati & Indianapolis Co. has specifications just completed for 200 standard stock, coal and flat cars, all to be 34 ft. long.

Bridge Notes.

The Union Pacific Railway Co. will receive proposals until Monday, Feb. 7, 1887, for one through Pratt truss iron bridge, to be built over the Snake River at Eagle Rock, Idaho, and finished before July 1, 1887, to be constructed in strict accordance with specifications sent on application. Proposals may be made either on material delivered at Omaha, Kansas City, Chicago or St. Louis, or on bridge erected complete at Eagle Rock. Free transportation will be provided for material and men between Omaha and Eagle Rock. Address proposals, indorsed "Proposals to build Eagle Rock Bridge," to Mr. J. J. Burns, Supply Agent, Omaha, Neb.

The Atlanta Bridge Works, of Atlanta, Ga., have the following bridges in course of erection: Covington & Macon, 600 ft., in 4 spans, five iron cylinder piers; Talladega & Coosa Valley, 576 ft., in four spans, five iron cylinder piers; East & West, of Alabama, 200 ft. draw-span; Western, of Alabama, 152 ft. span; city of Covington, Ga., 115 ft. span; Bartow County, Ga., 245 ft., in two spans, with masonry, 90 ft., in six spans. Grant Wilkins is the engineer.

The Pencoyd Iron Works, of Philadelphia, are manufacturing a three-span iron bridge for the Fort Worth & Rio Grande road over the Brazos River at Granbury, Tex. It is expected to be completed and shipped this month.

The King Iron Bridge & Manufacturing Co., of Cleveland, O., has received contracts from the Rio Grande International Bridge and Tramway Co., of San Antonio, Tex., for the construction of bridges across the Rio Grande River. Contract price about $300,000.

Manufacturing and Business.

The Wainwright Manufacturing Co., Boston and New York, is enlarging its factory at Medford, Mass., and has decided to erect a new building 105 by 36 ft to contain offices, store room and erecting shop.

The Peerless Manufacturing Co., of Louisville, Ky., has enlarged its molding machine works to the extent of 100 ft.

The Marion Steam Shovel Co., has, since Jan. 1, shipped one railroad steam shovel and wrecking car, and two ballast unloaders to the Texas & Pacific road; one railroad ditcher and ballast unloader to the St. Paul & Northern Pacific; one ballast unloader to the Mobile & Ohio, and one or two to other roads.

Messrs. Kendall & Roberts, Cambridgeport, Mass., stationary engine builders, report that their business during 1886 was 60 per cent. more than in 1885, and greater than in any previous year.

The Lane & Bodley Co., of Cincinnati, has been awarded the contract for a pair of 24 × 60 Corliss engines, four boilers, cable driving and tension machinery, a complete plant for two cables for the Mt. Auburn Cable Railroad of that city.

The Niles Tool Works in Hamilton, O., recently furnished a steel-tire turning lathe to the Cleveland, Columbus, Cincinnati & Indianapolis Railroad shops.

Mr. Henry Roberts, of Hartford, Conn., has received an order to furnish 150 cars of the Manhattan Elevated Railroad with the Roberts Patent Woven Wire Seat.

Iron and Steel.

Flagler & Fisher, engineers and contractors, are erecting for Tyler Bros., of Boston, a large mill for the manufacture of iron and steel lap-welded boiler tubes and pipe. The mill will have all of the latest improvements in tube making, with gas producers for supplying gas to the heating and welding furnaces, which will enable them to heat and weld the tubes uniformly throughout. The works are situated on the New York & New England road, in South Boston, and when completed will be the only tube mill in New England and the eighth in the United States. The contractors expect to finish their work some time next month and have the mill in operation by March 1.

The Shickle, Harrison & Howard Iron Co., of St. Louis, in consequence of its inability to obtain sufficient supplies of pig-iron from the South, has contracted for 10,000 tons of the Middleborough, England, foundry for immediate shipment. The price is about $21, duty included, on the wharf in St. Louis, which is $1 less than the quotations on a similar grade of iron from the south.

The Nashville Steel, Iron and Charcoal Co., newly organized in Tennessee, has elected Gen. Willard Warner, of Alabama, President; H. M. Pierce, of Buffalo, N. Y., Vice-President; M. A. Spurr, Buffalo, Treasurer, and James M. Reilly, Buffalo, Secretary.

The Woodstock Iron and Steel Co. and the Anniston Land and Improvement Co., of Anniston, Ala., have sold their property for $6,000,000. These two corporations owned a large part of the town of Anniston, two furnaces, 50,000 acres of mineral lands, etc. With the sale arrangements were made for the construction of 2 coke furnaces of 1,000 tons capacity each week, and the building of a railroad from Anniston to Gadsden, Ala.

The Low Moor Iron Co. is adding another stack to its blast furnace plant at Low Moor, Va.

The Pilot Knob Furnace in Iron County, Mo., is expected to be blown in about the middle of January. It has been leased from the St. Louis Ore and Steel Company by J. W Rattle, the chemist, of Cleveland, Ohio. It will probably be run on Pilot Knob ore exclusively, making iron especially low in phosphorous.

The old Glendower Rolling Mill at Danville, Pa., has been purchased by the Mahoning Rolling Mill Company, a new organization, of which Mr. Abraham S. Patterson, of Philadelphia, is President, and Mr. T. P. Howe, of Danville, is Treasurer. The works now have five double and nine single puddling furnaces, four heating furnaces, and two muck trains and one roughing train of rolls, one 16-inch, one 13-inch, and one 10-inch finishing train. The product of the mill is finished skelp iron, of which it is capable of turning out 15,000 tons annually.

The annual meeting of the Western Iron Association was held in Pittsburgh, Jan. 19, and the following officers re-elected: President, B. F. Jones; Vice-President, James I. Bennett; Secretary and Treasurer, Joseph D. Weeks. The question of advancing the card rate was considered at length, and it was decided that while the market was in a healthy condition, the outlook would not warrant an advance in prices. The card rate will therefore remain at 2 cents for the present.

The Eastern Iron Association at its meeting in Philadelphia increased the card rate from 2 to 2.1 cents, which involves an increase of 5 per cent. in wages.

The Rail Market.

Steel Rails.—The market is unsettled, and quotations are variable. Prices may be put at $39@$40 per ton at eastern mills, with the lower figure quoted only for very desirable orders.

Rail Fastenings.—The market is active, and prices firm. Spikes are quoted at 2.60@2.70 cents per lb. in Pittsburgh; track-bolts, 3@3.25, and splice-bars, 2.10@2.20 cents.

Old Rails.—The market for old iron rails is less active; sales are reported at $25@$26 per ton at tidewater. Old steel rails are quoted at $24@$27 per ton in Pittsburgh.

Cable Railroads in New York

The cable railroad scheme for New York City came up for discussion again last week in the Legislature at Albany. Though no results were attained the projectors of the road still evince absolute hope. Several bills affecting railroads were introduced in the House. One was for increasing the $5,000 penalty for deaths by railroad accidents to $10,000. Another was for compelling railroad companies to insure the land along their lines from fire by sparks.

Indurated Fibre Ware.

The Indurated Fibre Co., Lockport, N. Y., have added to their list of manufactures from the fibre which was described in the *Railroad Gazette*, of Dec. 17, 1886, an humble but important article for railroad stations which they wrongly catalogue as a "cuspidor." The Car-Builders' Dictionary defines a cuspidor as "a modern substitute for a spittoon, from which it differs only in form" (as appears from the engrav-

ings which accompany the definition.) The Indurated Fibre Co. make a "s ittoon" which is light, cleanly, cheap and apparently adapted to last longer than it is to be hoped the necessity for them in public places will exist. The company's ware has been awarded a medal at the American Institute Fair.

The Baldwin Locomotive Works.

The Baldwin Locomotive Works in Philadelphia make the following statement of the total number of locomotives built by them and the number exported in each year for the past 10 years:

Year.	Tot. No. built.	No exp'd.	Year.	Tot No. built.	No. exp'd
1877	145	39	1883	537	151
1878	292	79	1884	429	170
1879	394	90	1885	242	69
1880	517	53	1886	559	37
1881	554	89			
1882	563	119	Total	4,287	896

The number built last year almost reached the figures of 1882. The number built for export in the 10 years was 21 per cent. of the whole.

Cars for Brake Tests.

The Eames Vacuum Brake Co. has contracted with the Wells & French Co., of Chicago, to build 50 freight cars for use at the Burlington tests next April. These cars will be equipped with the Boston automatic coupler.

Pneum tic Cros ing Gates.

A recent adaptation of the use of air for operating railroad appliances is the working of the well-known swing-down safety gates by pneumatic pressure, manipulated by the gate tender from a little elevated cabin, whence he commands a good view of both railroad and street. Two of these have been put into operation in Chicago and one at Grand Rapids, Mich., and 20 more are under way for the West Shore, and the Baltimore & Ohio railroads, by the Railroad Switch, S g .al Gate Co.

Engineers' Club of St. Louis.

This Club met in St. Louis, Jan. 5, Vice-President Holman in the chair. 15 members and 2 visitors present. The Executive Committee announced the resignation of P. W. Schaumleffel, and recommending the re-instatement of Wm. T. Angell on the rolls of the Club. The Club then voted to reinstate Mr. Angell. The committee on relations with the Mercantile Library was continued. The committee on resolutions on the death of Col. C. Shaler Smith made a report in the shape of a short memoir. On motion, the report was adopted as expressing the sentiment of the Club, and it was ordered that an engrossed copy be prepared and forwarded to the family. The Secretary read a letter expressing the thanks of Col. Smith's family for the tribute of sympathy and respect tendered by the Club.

Prof. Johnson stated for Prof. Pritchett that the latter was unable to be present, and, as a change of meeting place was to be made, suggested Washington University, adding that his paper on "Results of Mexican Longitude Determinations" could be presented there to better advantage, and would be ready for the next meeting. On motion, the Club voted that when it adjourns it adjourn to meet in two weeks in the directors' room at Washington University.

The special order of the day, a paper by T. T. Johnston, on "The Great Water-way to Connect Lake Michigan with the Mississippi River, and its influence on floods in the Illinois River," was then read by the Secretary. It proved of considerable interest, and was discussed by Messrs. R. E. McMath. J. A. Seddon, Holman and Ockerson. Adjourned.

Logging Railroads in Mendocino County, California.

Mr. C. E. De Camp, Superintendent of the Caspar Lumber Co., writes as follows: "The Caspar Lumber Co. has built 2 miles of road during 1886, making a total of 8 miles (4 ft. 8½ in. gauge) now in operation, and equipped with 2 locomotives and 20 cars. This is operated as a logging road, hauling logs from the woods to the mill. It was a very hard road to build and has 29° curves. There is one trestle on the line 680 ft. long and 142 ft. high, which is the largest bridge of the kind in the state.

"Very large loads are hauled, trees being cut which are 10 to 15 ft. diameter, and very heavy, the butt cuts weighing 7 to 8 lbs. to the square foot. Fully one-quarter of all the logs hauled will sink in water.

"The loggir g trains are made up of two four-wheel trucks, built by the company. The axles are 5 in. in diameter, and the wheels from the Taylor Iron Works and A. Whitney & Sons. As much as 25 tons has been loaded on one of these trucks.

"There is also a railroad at Fort Bragg, 7 miles north of Caspar; it is 7 miles long and of standard gauge. At Navarra, 15 miles south of Caspar, there is a line of 4 miles, standard gauge. At Whitesboro, 13 miles south, there is a narrow-gauge line 9 miles long. At Albion, 12 miles south, a line of 3 miles, standard gauge. At Gualala, 45 miles south, there is a line about 10 miles long, of 6 ft. gauge. These are all the railroads in the county (Mendocino), and are all private roads used in connection with the lumber business."

General Railroad News.

MEETINGS AND ANNOUNCEMENTS.

Meetings.

Meetings of the stockholders of railroad companies will be held as follows:

Providence & Worcester, annual meeting, at the office in Providence, R. I., at 10 a. m. on Feb. 7.

St. Joseph & Grand Island, special meeting at Elwood, Kan., Jan. 26.

Dividends.

Dividends on the capital stocks of railroad companies have been declared as follows:

Canadian Pacific, 1½ per cent., semi-annual, payable Feb. 17.

Rome, Watertown & Ogdensburg, 2½ per cent., semi-annual, payable Feb. 15, to stockholders of record on Feb. 1. The last dividend was paid in July, 1875.

St. Louis & San Francisco, 3½ per cent., semi-annual, on the first preferred stock, payable Feb. 10, to stockholders of record on Jan. 22.

St. Paul, Minneapolis & Manitoba, 1½ per cent., quarterly, payable Feb. 1.

Railroad and Technical Conventions.

Meetings and conventions of railroad associations and technical societies will be held as follows:

The *Master Car-Builders' Club* holds its regular meetings at the rooms, No. 113 Liberty street, New York, on the third Thursday in each month.

The *New England Railroad Club* holds its regular meetings at its rooms in the Boston & Albany passenger station in Boston, on the second Wednesday of each month.

The *Western Railway Club* holds its regular meetings at its rooms in Chicago on the third Wednesday in each month.

The *Western Society of Engineers* holds its regular meetings at its hall, No. 15 Washington street, Chicago, at 7:30 p. m., on the first Tuesday of each month.

Brotherhood of Locomotive Engineers.

A meeting of this Association was held this week at Scranton, Pa, with delegates present from nearly every lodge in the United States. Mayor Ripley, of Scranton, delivered an address of welcome, and Frank P. Sargeant, of Terre Haute, Ind., made an address on the principles of the order.

Transportation in Congress.

The Senate has passed the Interstate Commerce bill as amended by the Conference Committee. The House has still to act on the bill, but it is thought it will pass.

The House (Jan. 18) passed a joint resolution authorizing the Secretary of the Interior to employ three experts to examine into the condition, working and financial management of the subsidized Pacific railroads. The examination is to be made with special reference to the questions of discriminations and rates and diversion of traffic from subsidized to non-subsidized lines. The resolution goes to the Senate, where it is likely to be amended.

A bill has been introduced in the House by Mr. Belmont (New York) to stop the transit of Canadian cars and engines over United States territory if the Canadian government continues to refuse our fishermen leave to land and transport fish in bond over Canadian railroads.

Senator Gorman (Md.) has introduced a similar bill in the Senate.

ELECTIONS AND APPOINTMENTS.

Allegheny Valley.—Mr. Spencer B. Rumsey has been appointed Superintendent of the Low Grade Division of this road in place of A. A. Jackson, resigned. Office at Reynoldsville, Pa.

American Society of Civil Engineers.—At the annual meeting in New York, Jan. 19, the election of officers resulted as follows: President, W. E. Worthen, of New York; Vice-Presidents, Thomas C. Keefer and Thomas F. Rowland; Secretary and Librarian, John Bogart; Treasurer, J. J. R. Croes.

Austin, Geneva, Mankato & St. Cloud.—The directors of this new Minnesota company are: H. A. Finch, Berlin, Minn.; W. E. Richardson, A. Knox, Austin, Minn.; M. Murphy, New Richmond, Minn., and E. M. Atwood, Wilton, Minn. The officers are: H. H. Carson, New Richmond, Minn., President; H. M. Davis, Geneva, Minn., Vice-President; C. H. Davidson, Austin, Secretary; D. B. Smith, Austin, Treasurer.

Bartow & Plant City.—The incorporators of this proposed road in Florida are: H. R. Duval, Jacksonville, Fla.; J. Wilcox Brown, Baltimore; J. O. C. Blount, J. N. Hooker, D. Hughes, E. E. Skipper, S. C. Hill, J. Z. Dunlap, E. W. Coddington, W. J. Emerson, W. T. Whitledge, L. R. Wright, A. B. Brookins, M. O. Arnold and S. H. Tigner, Bartow, and W. P. Head and R. M. Wells, Plant City, Fla. Mr. Duval is Receiver of the Florida Railway & Navigation Co.

Berlin Branch.—At the annual meeting held at Abbottstown, Pa., the following directors were elected: Henry A. Young, Robert M. Wirt, Hanover, Pa.; Jacob Resser, A. W. Storm, W. S. Hildebrand, J. M. Smyser, R. N. Meisenhelder, East Berlin, Pa.; Wm. Bittinger and Joseph Wolf, Abbottstown, Pa. A. W. Eichelberger, of Hanover, was chosen President.

Central Traffic Association.—Capt. J. D. Parker is announced as an additional member of the Cotton Rate Committee, representing the Memphis & Cincinnati Packet Company.

Chicago & Atlantic.—Mr. T. C. Donald has been appointed General Passenger Agent of this road in place of S. W. Snow, resigned.

Chicago, Burlington & Quincy.—Mr. E. J. McDole has been appointed Traveling Passenger Agent for this company, with headquarters at 112 North Fourth street, St. Louis, Mo.

Chicago & Northwestern.—E. P. Wilson, General Passenger Agent of this road, announces the following assignments to office in the passenger department: A. G. Barker, General Traveling Agent, Chicago; F. H. Melendy, New England Passenger Agent, Boston; A. H. Pride, General Eastern Agent, New York; E. T. Monett, Passenger Agent, New York; J. H. Morely, Canadian Passenger Agent, Toronto; W. H. Guerin, Michigan Passenger Agent, Detroit; George L. Harrison, Southern Passenger Agent, Chicago; W. N. Babcock, General Western Agent, Omaha; George D. Williamson, General Agent, Denver; W. H. Meade, General Agent, Portland, Oregon; H. P. Stanford, General Agent for California, San Francisco. The following traveling passenger agents are announced: H. A. Gross, Lancaster, Pa.; E. B. Spain, Buffalo; F. M. Snovely, Cleveland; Charles Trover, Columbus, Ohio; A. H. Waggener, Indianapolis; F. B. Garvin, Marshalltown, Iowa; James Gibson, Madison, Wis.; J. A. Murray, Omaha; J. H. Young, Salt Lake City.

Chicago, Paducah & New Orleans.—The incorporators and first board of directors are: W. G. Wilson, Chicago, Ill.; Henry Burnett, Paducah, Ky.; J. N. Reece, Springfield, Ill.; D. T. Ayres, Galveston, Tex.; W. H. Parrish, Jr., Harrisburg, Ill.; S. S. Barger, Eddyville, Ill., and A. G. Murray, Springfield, Ill.

Cleveland, Lorain & Wheeling.—Mr. Frank M. Townsend has been appointed Purchasing Agent of this company, with office at 24 Mercantile Bank Building, Cleveland, Ohio. He will also continue to act as Paymaster.

Connecticut River.—At the annual meeting in Springfield, Mass., Jan. 19, the old directors were re-elected.

Diagonal Trunk.—The directors of this new road, which is to be located in Nebraska and western Kansas, are: A. H. Weir, Lincoln, Neb.; C. M. Desirlets, Belvidere, Neb.; Gen. Frederick D. Funeat, W. S. Francis, S. B. Voris, C. R. Kelly and F. D. Funeat of Louisville, Ky. The officers are: L. S. Jones of Hartland, Kas., President; the Hon. Benjamin Bowen of Hartland, Kas., Secretary.

Griffin, La Grange & Western.—This road, lately incorporated in Georgia and Alabama, has elected the following officers: W. E. H. Searcy, Griffin, Ga., President; J. W. Sullivan, Erin, Ga., Vice-President; T. D. Rockwell, Griffin, Secretary; J. G. Truits, La Grange, Ga., Treasurer.

Henderson Bridge Co.—At the annual meeting in Louisville, Ky., directors were re-elected as follows: W. T. Jordan, Henry C. Murrell, W. C. Hall, Cushman Quarrier, A. M. Quarrier, H. W. Bruce, and M. H. Smith. The directors elected the following officers: M. H. Smith, President; S. S. Eastwood, Secretary and Treasurer; H. W. Bruce, Attorney; F. W. Vaughan, Chief Engineer.

Indianapolis Belt.—At the annual meeting in Indianapolis, Ind., the following directors were elected: Wm. R. McKeen, Col. Horace Scott, Wm. P. Ijams, John Thomas R. S. McKee, D. W. Minshall, M. A. Downing, D. Deming and J. F. Miller. The directors chose the following officers: President, Wm. R. McKeen; Secretary, R. H. McKee; Auditor and Superintendent, W. P. Ijams.

Kansas City, Memphis & Birmingham.—Mr. John S. Foster has been appointed Division Engineer of the Second Division of this road in Alabama, in place of Capt. B. B. Gordon, resigned.

Kansas, Colorado & California.—The directors are: B. F. Simpson, Topeka, Kan.; J. H. Borders and A. V. Scott, Coolidge, Kan.; J. H. Ribbitts, T. H. Paessler, J. W. Voohers, and J. P. Francis, Kendall, Kan.

Kansas, Nebraska & Dakota.—Mr. John Kellar, of Philadelphia, has been elected President; Mr. L. L. Bush Vice-President and General Manager; and Mr. Alexander McGaw, of Philadelphia, Treasurer.

Lancaster & Hamden.—The directors of this company have been elected as follows: John G. Reeves, Phil. Rising, Theo. Mitthoff, B. F. Dum, T. R. Tarpry, Phil. Bininger, and W. B. MacCracken, Lancaster, Ohio; James Ballard and W. H. Mowery, Tarlton, O.; John Ogier, Hamden, O. The officers are: President, J. G. Reeves; Vice-President, Theo. Mitthoff; Treasurer, Philip Rising; Secretary, B. F. Dum.

Lehigh Valley.—At the annual meeting in Philadelphia, Jan. 18, the following were elected: President, Elisha P. Wilbur; directors, Charles Hartshorne, William L. Conyngham, Ario Pardee, William A. Ingham, George B. Markle, Robert H. Sayre, James L. Blakslee, Joseph Patterson, John R. Fell, Robert A. Lamberton, John B. Garrett, Charles O. Skeer.

Louisville, Cloverport & Western.—Mr. Louis Caldwell, ex-Assistant Superintendent of the Louisville & Portland Canal, has been appointed Chief Surveyor for this company.

Michigan Railroad Commission.—John T. Rich has been appointed Commissioner of Railroads of Michigan. Wyllys C. Ransom has been reappointed Deputy Commissioner.

Minnesota & Northwestern.—Mr. J. H. Eames has been appointed Purchasing Agent of this company. All correspondence pertaining to that department should be directed to him at St. Paul, Minn.

Minnesota Railroad Commission.—Gov. McGill of Minnesota has appointed the following Railroad Commissioners: Horace Austin, John L. Gibbs and George S. Becker.

Missouri, Kansas & Southern.—The following are the directors of this new Kansas company: A. Elmer, President; Constant A. Andrews, First Vice-President; W. W. Flanigan, William Brookfield, T. B. Sickles, M. W. Conkling, F. A. Newgent, all of New York; A. W. Oliver, M. W. Levy, W. C. Woodman, John P. Jones, H. H. Graves, E. Wait, W. S. Grosvenor and L. M. Conkling, all of Kansas. The last-named gentleman is Second Vice-President of the company.

Mississippi High Level Bridge Co.—The incorporators of this new company are: Joseph G. Chapman, Rufus J. Lackland, James H. Stout, Wm. L. Huse, Fred. G. Niedringhaus, Charles F. Orthwein and Jerome Hill, of St. Louis; John W. Bunn, of Illinois; Wm. A. Rust and Joseph G. Thorp, of Wisconsin; H. L. Stout, of Iowa; W. F. Davidson, Patrick Kelly and E. W. Durant, of Minnesota.

Monongahela Navigation Co.—At the annual meeting in Pittsburgh, Jan. 13, the following officers were chosen: President, M. K. Moorhead; Managers, Joseph Albree, A. C. Bakewell, Alexander Bradley, Felix R. Brunot, John Harper, George B. Logan, J. B. Moorhead, J. B. Murdock, A. E. W. Painter and J. B. Sweitzer; Secretary and Treasurer, Wm. Bakewell.

Montana Union.—Mr. J. E. Dawson has been appointed Superintendent of this road, and Mr. S. B. Calderhead takes his place as Agent at Butte, Montana.

Montreal, Portland & Boston.—At the annual meeting in Montreal, Jan. 19, the old directors were re-elected, as follows: S. T. Willet., R. N. Hall, M. H. and A. B. Chaffee, M. S. Lonergan, Emmons Raymond, W. F. Ritchie and George T. O'Halloran. While this meeting was being held some of the opponents of the above board met and elected J. C. Hatton President; Col. Gilmore, Vice-President; Edward I. Major, Secretary and Treasurer; Directors, George W. Hendel, Bradley B. Smalley, Albert Cross, J. L. Morris, Col. A. H. Gilmore, A. D. Nichols.

New York, Ontario & Western.—At the annual meeting in New York, Jan. 19, the following directors were elected: Thomas P. Finler, J. Coleman Drayton, Thomas Simyard, Francis R. Culbert, Byron D. Benson, John Greenough, Richard Irvin, Jr., H. O. Northcote, Wm. H. Peabody, New York; Charles S. Whelan, Philadelphia; Joseph Price, Charles J. Russell, H Pearson, London, England. After the stockholders meeting Thomas P. Potter was unanimously re-elected President, Joseph Price, Vice-President, and John Burton, Secretary and Treasurer.

Norfolk Terminal Co.—This company, which is controlled by the Norfolk & Western, has elected the following directors: F. J. Kimball, Clarence H. Clark, Edward W. Clark, Joseph I. Doran, William Lamb, W. C. Bullitt and A. J. Hemphill.

Pittsburgh Junction.—At the annual meeting in Pittsburgh, Jan. 17, the following were elected: President, Thomas M. King; Directors, James Callery, John W. Chalfant, C. L. Fitzhugh, Robert Garrett, C. B. Herron, Wm. Metcalf, Reuben Miller, Henry W. Oliver, Jr., A. E. W. Painter, Jacob Painter, Samuel Spencer, Wm. Vankirk.

Pontiac & Pacific Junction.—Hon. L. R. Church, Q. C., has been elected President of this Canadian company.

Portland & Ogdensburg.—At the first meeting of the new corporation formed by the bondholders at Portland, Me., the following directors were chosen: Samuel J. Anderson, Horatio N. José, W. F. Milliken, Charles H. Amsden, S. R. Small, Francis Fessenden, F. N. Dow, W. H. Woodbury, S. W. Thaxter and C. J. Chapman.

St. Louis & Chicago.—Mr. A. G. Kleinbeck has been appointed Superintendent of this road, with office at Litchfield, Ill.

St. Louis, Kansas City & Colorado.—The new board of directors is made up as follows: F. E. Hinckley, Chicago; T. C. Jones and J. C. Carpenter, Kansas; G. W. Kimball, St. Louis; Daniel Butler and Messrs. Draper and Devine, of New York, in the place of Messrs. Hibbard, Sherwood, Orrick, Tiernan Elliott and Brown. The directors elected Mr. Hinckley President, and Mr. Gallup, of New York, Secretary and Treasurer.

Sandusky, Mansfield & Newark.—In Newark, O., Jan. 19, this company (road leased to Baltimore & Ohio) elected John Gardiner President; J. O. Moss, Secretary and Treasurer.

South Branch.—At the meeting held last week at Romney, W. Va., directors were elected as follows: S. Spencer, David Lee, W. Bradshaw, Capt. R. A. French and Messrs. Blue, Haskell and Stump, of Romney, W. Va. These chose the following officers: President, S. Spencer; Secretary, W. S. Townsend; Treasurer, W. J. Ijams.

Southern Pacific.—Mr. Creed Haymond has received the appointment of General Solicitor and Counsel for this company, the position left vacant by the late Judge S. W. Sanderson.

Chas. F. Smurr will preside over a new agency of this company at Los Angeles, Cal., with the title of Assistant General Freight Agent for Southern California.

Texas & Pacific.—A. H. Watts is Master Mechanic in charge of motive power, of this company's Eastern Division with office at Marshall, Tex. J. W. Addis, Master Mechanic of New Orleans Division, with office at Gouldsboro, La. A. S. Douglas, same position on Rio Grande Division, office at Big Springs, Tex. F. M. Alexander, General Foreman Car Department, will have charge of shops at Marshall, Tex. A. B. Mars is appointed Chief Clerk of Motive Power Department, office at Marshall.

Wabash, St. Louis & Pacific.—Mr. James Smith, the General Traffic Manager of this road, has assumed charge of the freight department as General Freight Agent of the lines west of the Mississippi, the position left vacant by Mr. M. Knight, who has been appointed to a similar position on the eastern lines. Mr. Samuel Smith is Assistant General Freight Agent. Mr. W. H. Knight has been appointed Division Freight and Passenger Agent of the line from Detroit to Logansport, Ind., with office at Detroit. Mr. S. B. Sweet is in a similar position of the line from Indianapolis to Michigan City and of the Attica & Covington and Champaign & Sidney branches, with office at Peru, Ind. Mr. E. E. Fleming has a like position on the line from Peoria, Ill., to Jacksonville, and from Havana to Springfield, also the branch from Pittsfield to Maysville, with office at Peoria.

Western Railroad Association.—At the annual meeting of this association held in Chicago last week the following were elected: President, B. F. Ayer; Secretary, C. R. Babeuf; General Counsel and Treasurer, George Payson; Executive Committee, B. F. Ayer, H. B. Stone, E. T. Jeffery, H. H. Toppleton, A. L. Osborn, John Newell, B. C. Cook; Board of Directors, B. F. Ayer, Illinois Central; A. L. Osborn, Michigan Central; T. F. Withrow, Chicago, Rock Island & Pacific; H. B. Stone, Chicago, Burlington & Quincy; J. C. McMullin, Chicago & Alton; Roswell Miller, Chicago, Milwaukee & St. Paul; John Newell, Lake Shore & Michigan Southern; John B. Carson, Louisville, New Albany & Chicago; H. H. Toppleton, Cleveland, Columbus, Cincinnati & Indianapolis and Indianapolis & St. Louis; S. R. Callaway, Union Pacific; B. C. Cook, Chicago & Northwestern; E. T. Jeffery, Cincinnati, Indianapolis, St. Louis & Chicago.

Zanesville, Mt. Vernon & Marion.—At a meeting in Zanesville, O., the following directors were elected: Gideon E. Meigs, Henry D. Lee, Abner P. Pinkerton, Frank N. Wedge, Rufus C. Burton, Allen Levering, Jason J. Cover, Wm. A. Cassel, Wm. Banning, Nehemiah Tilton, Noah Tilton, David Mackey, Albert T. Baker, W. Hadley Clark, Henry C. Mercer. The officers are: President, Gideon E. Meigs; Vice-Presidents, Henry D. Lee and A. P. Pinkerton; Secretary, Rufus C. Burton; Treasurer, Frank N. Wedge; Assistant Treasurer, G. F. Axline; Auditor, H. A. Leslie; Chief Engineer, John B. Yates; General Counsel, J. B. Foraker; General Manager, Albert E. Boone.

Zanesville, Newcomerstown & Cleveland.—The directors are: Willis Bailey, Edmund Turner, Benjamin Wheeler, Edward Spencer, Zanesville, O.; Dr. A. E. Beers, Newcomerstown, O.; H. H. Squair, Cincinnati, O.; John W. Fletcher, Nashville, Tenn. Officers elected: President, Willis Bailey; Vice-President, Dr. A. M. Beers; Secretary, D. B. Linn; General Manager, Edmund Turner.

PERSONAL.

—Mr. Alex. McDonnell, a well-known railroad contractor, died in Toronto, Canada, this week. He was 80 years of age.

—Mr. A. A. Jackson has resigned the position of Superintendent of the Low Grade Division of the Allegheny Valley road.

—Mr. George L. Fowler, Editor of the American Railway Publishing Co.'s papers, has been appointed First Assistant Commissioner to the International Railway Exposition, to be held in Paris, France, next summer.

—Prof. R. H. Richards, President of the American Institute of Mining Engineers, sailed on Jan. 6 from New York to Bermuda for the benefit of his health. Although Professor Richards' health is greatly improved, it is doubtful whether he will be able to attend the meeting of the Institute at Scranton, Pa., in February.

—Major-General William B. Hazen, for six years Chief Signal Officer of the United States Army, died in Washington, Jan. 16. He was born in Vermont in 1830. He graduated from West Point in 1855. He served with distinction during the civil war, and at the close ranked as Brevet Major-General. In 1877 he was made Military Attaché to the United States Legation at Vienna, Austria, resigning that position to take that of Chief Signal Officer in 1880.

—Mr. J. Thomas Vose, a prominent railroad man, died last week in Boston. He was President of the Boston, Concord & Montreal road from 1878 to 1886. He was actively identified with the building of the Pemigewasset Valley Railroad from Plymouth, Mass., to North Woodstock, and intended that it should be extended to a junction with the Franconia Railroad at the Profile House, White Mountains. Mr. Vose was President of the latter road, and also a director of the Mount Washington road.

—Mr. George W. Cope, who has for many years been honorably identified with the work of the American Iron & Steel Association, and who has for nearly two years past acceptably filled the position of Secretary, tendered his resignation early in December last to become the Western editor of the *Iron Age*, with his office at Chicago. He retained his desk in the office of the Association until the close of the year. Mr. Cope had previously, during the last half of 1883 and the whole of 1884, been a member of the staff of the *Iron Age*, and he now returns to its service.

—Mr. Arthur M. Wellington, well-known as a writer on engineering subjects, has become editor and part proprietor of the *Engineering News*. His marked ability was first made generally known through a series of papers published in the *Railroad Gazette* in 1876–77, on the "Economic Theory of the Location of Railways." His "theory" of location has been generally accepted by engineers as being correct, and either original or first formulated and proved by him. It has undoubtedly affected the location of most roads recently built in this country. These papers were afterward published in book form by the *Railroad Gazette*, and for a number of years the edition has been "out of print" and in great demand. A new, revised and enlarged edition is now announced to appear next month. Mr. Wellington has been, since 1877, Assistant Engineer on the New York, Pennsylvania & Ohio; Locating Engineer for the Mexican National; Assistant General Manager in charge of the Guadalajara Branch of the Mexican Central and Associate Editor of the *Railroad Gazette*.

TRAFFIC AND EARNINGS.

Globe Line.

Mr. Edward Gumbs, Acting Manager of the Globe Line, gives notice that that fast freight line will be discontinued on Jan. 31, on which date all through billing and traffic arrangements of that line will cease.

Railroad Earnings.

Earnings of railroad lines for various periods are reported as follows:

	1886.	1885	Inc. or Dec.	P. c
Year to Dec. 31:				
Ala. Gt. South...	$1,213,686	$1,079,186	I. $137,500	12 8
Buff., N. Y. & P..	2,564,289	2,416,258	I. 148,022	6.1
Bur., C. R. & No.	2,933,309	3,093,514	D. 160,205	5.2
Cape F. & Y. V..	226,700	205,968	I. 20,732	10.1
Ches. & Ohio.....	4,695,107	3,361,234	I. 733,933	21.8
Ches., O. & S. W..	1,711,950	1,571,155	I. 140,795	8 9
Cin., N. O. & T. P.	2,856 570	2,681,547	I. 175.023	6.5
Cin., H. & Ft. W..	383,120	373,693	I. 9,427	2.5
Cin., W. & Balt..	2,005 506	1,705,268	I. 300,238	17.6
Col. & Cin. Mid..	319.53	214,767	I. 104,786	48.7
Col., H.Vy. & Tol.	2,452,077	2 311,004	I. 141,073	6.1
Den. & R. G. W..	1,051,900	1,021,089	I. 30 811	3.0
Eliz., Lex. & B. S.	935,683	706,427	I. 229,256	32.4
Flint & Pere Ma	2,142,6 9	1,940,790	I. 202,899	10.4
Ft. Worth & D...	444.125	463,627	D. 19,502	4.2
Grand Rap. & I..	2,078,510	1,946,144	I. 132,366	6.8
Grand Trunk.....	17 147,871	15,161,807	I. 1,986,064	13.1
K. C., Ft. S. & G.	2,534,380	2,546,528	D. 22 148	0 9
K. C., Spr. & M...	1,561,416	1,511,461	I. 49.955	3.3
Lake Erie & W....	1,289,786	1,181,956	I. 107,830	9.1
Lehigh & H. R....	217,134	180 748	I. 36,386	20.2
Lou., Ev. & St. L.	853,586	721,004	I. 131,582	18.2
Mexican Cen.....	3,853,413	3,559,581	I. 29 ,832	8.3
Mich. & Ohio.....	224,064	190,308	I. 33,756	17 8
Miss. & Tenn....	44 ,031	476,586	D. 35,555	7 4
Nash., C. & St. L.	2,400,771	2,134,527	I. 266,244	12.5
Net earnings...	970,807	860,138	I. 110 669	12.8
N. Orl. & N. E ...	661,964	698,165	D. 37,191	5.3
N. Y. C. & H. R..	32,651,015	24,495,873	I. 8,155,142	33.3
Oregon R. & N....	5,327,232	5 107,188	I. 220,044	4.3
Net earnings....	2 385,551	2,324,562	I. 60,280	2 6
Rome, W. & Og..	2,689,493	1,742,163	I. 947,330	54.4
Texas & Pacific ..	6,056 370	5,672,484	I. 386,886	6 8
Vicks. & Mer.....	524,197	4 6,232	I. 37,965	7 8
Vick., Shre. & P.	523,071	449,580	I. 73,491	16.3
Eleven months to Nov. 30:				
Bur., C. R. & No.	$2,826,540	$2,826,605	D. $200,075	7.1
Net earnings....	704,224	855,625	D. 151.401	17.4
E. Ten., Va. & G..	3,862,593	3,711,883	I. 150,710	4.1
Net earnings....	1,384,611	1,218,914	I. 165 697	13.6
Georgia Pacific...	749.117	594 962	I. 154 255	25.9
L. Rock & Ft. S..	626,825	541,469	I. 85,356	15.8
L. Rk., M. R. & T.	343,897	311,300	I. 32,597	10 5
Minn. & St. L....	1,200.436	1,584,264	D. 183,828	11.6
Tol. & Ohio Cen..	744,927	.....	.....	....
Net earnings...	222,831	.....	.....	....
Month of November:				
Bur., C. R. & No.	$200.070	$313.006	D. $12,336	3.9
Net earnings...	98,301	89,862	I. 8,439	9.4
Cairo, V. & C....	63,092	45.998	I. 17,094	37.2
Net earnings...	6,211	8.302	D. 2,091	25.2
E. Ten., Va. & G.	424,372	400,781	I. 23.591	5.9
Net earnings...	212,910	165,956	I. 46,954	28.3
Georgia Pacific..	97,153	72,919	I. 24,234	33 2
L. Rock & Ft. S.	104,638	88,108	I. 16,530	18.8
L. R., M. R. & T.	57.159	54,894	I. 2.265	4.1
Minn. & St. L....	161,854	171,555	D. 9,701	5.6
Tol. & Ohio Cent.	84,671	41,711	I. 42,960	103.0
Net earnings..	28,512	1,438	I. 27,074	....
Month of December:				
Ala. Gt. South...	$128.014	$115.700	I. $12,314	10.6
Buff., N. Y. & P..	190,203	204.516	D. 14,316	7.0
Bur., C. R. & No.	306,770	266,909	I. 39,870	14.9
Cape F. & Y. Vy.	20,817	17,865	I. 2,952	16.4
Ches. & Ohio	339,3 0	314,195	I. 26,105	7.4
Ches., O. & S. W.	165,500	147 586	I. 17,914	12.1
Cin., H. & Day...	259,498	258,099	I. 1,399	0.5
Cin., N. O. & T. P.	267,069	261,716	I. 5,353	2 0
Cin., R. & Ft. W..	34,492	30,779	I. 3,713	11.9
Cin., W. & Balt..	177,1:9	160,924	I. 16,205	10.1
Col. & Cin. Mid..	29,047	27,296	I. 1,751	6.4
Col., H.Vy. & Tol.	243,557	209,416	I. 34,141	16.3
Den. & R.G. W...	90,50	74,238	I. 16,262	21 8
Eliz., Lex. & B S..	79.000	57,732	I. 21,268	36.7
Flint & Pere Mar.	191,305	177,591	I. 13,714	7.7
Fla. Ry. & N. Co.	1.2,022	112,415	I. 9,607	8.6
Ft. Worth & D..	44,954	33,361	I. 11,593	35.1
Grand Rap. & I..	184,374	150,593	I. 33,781	22.4
Grand Trunk....	1,425 836	1,257,073	I. 168,763	13.5
K. C., Ft. S. & G.	220,794	202,537	I. 18.57	9.0
K. C., Spr. & M..	164,128	131,779	I. 32,349	24.5
Lake Erie & W....	109,355	109,523	D. 168	0.2
Lehigh & H. R....	20,743	19 319	I. 1,424	7 5
Lou., Ev. & St. L.	67,300	68,715	D. 1,415	2.1
Mexican Central..	436,090	340,697	I. 89,993	26.0
Mich. & Ohio	20,3.2	21,867	D. 1,535	7.0
Minn. & N. W....	66,691	25,991	I. 40,700	153.5
Miss. & Tenn....	58,581	64.774	D. 6,193	9.5
Nash., C. & St. L.	229,946	193 327	I. 36,619	19.0
Net earnings...	97,333	74,812	I. 22,521	30.1
N. Orl. & N. E	82,451	82,699	D. 248	0.3
N. Y. Cen. & H. R.	2,945 063	2,310,184	I. 634,879	27.5
Oreg. R. & N.	366.951	487,897	D. 80,946	18.6
Net earnings....	166,954	204,937	D. 37,983	18.5
Rome, Wat. & Og.	233,194	156,616	I. 76,578	48.8
Texas & Pacific ..	709 257	699,257	I. 70,000	10.0
Tol., A. A. & N. M.	41.353	29,319	I. 12,034	42.1
Vicks. & Mer. ...	67,3.9	74,105	D. 6,796	9.2
Vicks., Shre. & P.	77,409	70 926	I. 6,483	9.1

Early reports of monthly earnings are usually estimated in part, and are subject to correction by later statements.

California Through Freights.

Shipments of through freight eastward from California points by the Southern Pacific Co.'s lines in 1886 were:

	Tons.	P. c.
San Francisco	154,627	66.8
Los Angeles	24.168	10.4
Sacramento	22,924	9 9
Other interior points	29,678	12.9
Total	231,397	100.0

The heaviest shipments, 38,512 tons, were in March; the lightest, 5,960 tons, in January.

Trunk Line Executive Committee.

The Trunk Line Executive Committee met on Jan. 13. Nothing but routine business was transacted. The subject of maintenance of rates on live stock and dressed beef was under consideration, but no definite action was taken.

Southwestern Passenger Association.

The general passenger agents of the roads members of the Southwestern Passenger Association met at Commissioner Abbott's office, at Chicago on Jan. 12 and 13. The subject of rules and by-laws for the carrying out of the pooling agreement was, after discussion, referred to the Commissioner to formulate rules and by-laws and submit the same to a future meeting.

Northwestern Freight Association.

Commissioner J. N. Faithorn has issued a call for a meeting of the general managers and general freight agents of the roads members of the Northwestern Freight Association, to be held at Chicago on Jan. 25. It is alleged that the pool only covers about 10 per cent. of the east-bound traffic from St. Paul and Minneapolis, and that unless an arrangement be made by which all the traffic is included in the division serious trouble will result.

Percentages in Des Moines Pool.

At a meeting of the Central Iowa Association on Jan. 13, the Wabash assented to the rearbitration of percentages in the Des Moines pool. Commissioners Midgley, Faithorn and Carman were appointed arbitrators. It was understood the award was only to cover shipments for the next six months.

Cotton.

Cotton movement for the week ending Jan. 14 is reported as follows, in bales:

	1887.	1886.	Inc. or Dec.	P. c.
Interior markets:				
Receipts.....	59 896	43 661	I. 16,235	37 1
Shipments.....	93 403	56,229	I. 37 174	66.4
Stock, Jan. 14.....	389,745	513,993	D.124,148	24.2
Seaports:				
Receipts.....	142,915	108,488	I. 34,427	31 6
Exports	165,805	98,155	I 67,650	69 0
Stock, Jan. 14	1,010,061	1,106,586	D. 96 525	8.7

The total shipments from plantations for the crop year to Jan. 14 are estimated at 5,063,184 bales, against 5,022,367 last year, 4,717,153 in 1884-5 and 4,574,648 in 1883-84.

Coal.

Coal tonnages for the week ending Jan. 8 are reported as follows:

	1887.	1886.	Inc. or Dec.	P.c.
Anthracite	505,899	554 928	D. 49 029	8.8
Eastern bituminous.	276.886	234,198	I. 42,688	18.2
Coke	75,244	66,087	I. 9,157	13.9

For the year ending Dec. 31 the Tennessee Coal, Iron & Railroad Co. shipped 130,262 tons coal and 137,468 tons coke; a total of 267,730 tons.

Cumberland coal shipments for the week ending Jan. 8 were 54,736 tons; last year, 54,611: increase 125 tons, or 0.2 per cent.

Pennsylvania Railroad coal tonnage for the week ending Jan. 8 was:

	Coal.	Coke.	Total.	1886.
Line of road..	172,922	74,220	247,142	167,238
From other lines	86,685	1,024	87,709	60.448
Total.....	259,607	75,244	334,851	227 686
Year to Jan. 8..	267,225	85,439	352,664	217,376

Increase for the week, 107,165 tons, or 47.0 per cent.; increase for the year, 75,288 tons, or 27.5 per cent.

Anthracite coal tonnage passing over the Belvidere Division, Pennsylvania Railroad, for the year ending Dec. 31, was:

	1886.	1885.	Inc. or Dec.	P.c
Coal Port for shipment	76.445	111.581	D. 35,136	31 4
S. Amboy " " ..	514 533	571,244	D. 56 711	9 9
Local points on N. J. divs..	952,945	895,284	I 57,661	6.4
Co.'s use " " ..	244,787	223.065	I 21,722	9.7
Total.....	1,788,710	1,801 174	D. 12,464	0 7

Of the total last year, 1,517,230 tons were from the Lehigh Region and 271,480 from the Wyoming Region, against 1,529,210 and 271,964 tons respectively in 1885.

Shipments of coal and coke through the Monongahela Navigation Co.'s locks, from the mines on the Monongahela River above Pittsburgh, for the year ending Dec. 31, were, in bushels:

1886.	1885.	1884.	1883.
103,099,117	85,923.077	82.200,852	112.305,389

The increase last year over 1885 was 27,176,040 bushels, or 24.6 per cent. The total tolls received by the company last year were $255,342. Since 1882 the company has expended $680,243 in improvements and new construction. An effort is being made to induce the United States government to take and maintain the company's works.

Cumberland coal shipments for the week ending Jan. 15 were 45,632 tons. Total to Jan. 15, this year, 100,368; last year, 87,849; increase, 12,519 tons, or 14.2 per cent.

Pennsylvania Railroad coal tonnage for the week ending Jan. 15 was:

	Coal	Coke.	Total.	1886.
Line of road.....	168,076	82,818	250,894	140,786
From other lines..	85,749	2,660	88,409	44,410
Total.....	253 825	85,478	339,303	185,196
Year to Jan. 15....	521,050	170,917	691,967	462,572

Increase for the week, 154,107 tons, or 83.3 per cent.; increase for the year, 229,395 tons, or 49.5 per cent.

Chicago Shipments Eastward.

The Board of Trade reports east-bound shipments from Chicago for the week ending Jan. 15, 1887, as follows, in tons:

	Tons.	P. c.		Tons.	P.c.
Chi. & Gd. Trunk..	8,632	19.6	Pitts., Ft. W. & C...	5,488	12 5
Mich Central.....	7,496	17.0	Chi., St L. & Pitts.	5,327	12.1
Lake Shore	5,629	12.8	Balt. & Ohio.....	1,737	4 0
N. Y., Chi. & St. L..	3.529	8.0	C., Ind., St. L. & C..	6,179	14.0

The statement includes local as well as through shipments. The total for the week was 44,017 tons, being an increase of 6,497 tons, or 17.3 per cent. over the preceding week.

Shipments for eight weeks past by these reports have been, in tons:

Week ending							
Nov. 27.	Dec 4.	Dec. 11.	Dec 18.	Dec. 25.	Jan. 1.	Jan. 8.	Jan. 15.
35,462	40,935	45,238	48 080	63,134	44,292	37.520	44.017

Shipments by the Chicago & Atlantic road are not included above. These shipments include dead freight only.

Grain Movement.

The Northwestern grain receipts for the seven successive weeks ending with Jan. 1, 1887, and for the corresponding weeks of the two preceding years have been, in bushels:

Week ending				
	Nov. 10.	Nov. 27.	Dec. 4.	Dec. 11.
1886.	5,701,685	3 882,275	4,540,691	5, 33,756
1885.....	4,985,772	6,017 443	6,750,703	5,282,441
1884.....	5,870,714	6 649,168	6,036,576	7,035,117
	Dec. 18.	Dec. 25.	Jan. 1.	Total.
1886.....	5,745,583	4,209,485	3,981,322	33,350 707
1885.....	4,79 ,511	4 187,988	3,051 674	37,137,711
1884.....	5,982,268	5,284,777	4,371,937	41,760,4 7

The total receipts for the seven weeks of 1886 was 10.4 per cent. less than the receipts for corresponding period in 1885, and 19.4 per cent. less than for same weeks in 1884.

Pittsburgh West-bound Rates.

The freight agents of railroads shipping westward from Pittsburgh have fixed the following schedule of rates on first, second, third, fourth, fifth and sixth class respectively: Chicago, 50, 40, 30, 22½, 17½, 15; East St. Louis, 65, 50, 38, 26, 21, 18; Detroit, 45, 35, 25, 18, 14, 12; Cleveland, 32, 25, 20, 13, 10, 9; Cincinnati, 34, 27, 20, 15, 12, 10. The advance in the rates will average about 15 per cent. The new rates will go into effect Feb. 1.

Pass Agreement.

The general freight agents of the various roads in the West, Northwest and Southwest met at Chicago on Jan 12 and 13, to perfect the details of the agreement restricting the issue of free or reduced transportation to shippers. Complications have arisen since the adoption of the agreement by the general managers which render it very doubtful whether the agreement can be carried out. It is claimed that the new lines between Chicago and the Northwest have already issued a large number of annual passes to their shippers. Other complications have also arisen, and harmonious action being impossible, the meeting adjourned. The chairman

was requested to call a meeting of the general managers and general freight agents, to be held within a week from date, to further consider the subject.

The meeting adopted a resolution that the pass agreement should not take effect until April 1, also that each road should submit lists of passes issued since Jan. 1.

New York Milk Receipts.

The *Milk Reporter* gives the total receipts of milk in New York city by all lines for the year ending Dec. 31 as follows, in 40-quart cans:

	1886.	1885.	Inc. or Dec.	P. c.
Milk	5,268,455	4,930,459	I. 337,996	6.9
Cream	100,380	94,868	I. 5,512	5.8
Condensed milk	77,103	77,208	D. 105	0.1
Total cans	5,445,938	5,102,535	I. 343,403	6.7

The New York, Lake Erie & Western is the largest milk carrier, followed by the Harlem Division of the New York Central; the New York, Susquehanna & Western; the New York, New Haven & Hartford; the Long Island and the New York, Ontario & Western in about the order named.

Ohio River Pool.

At a meeting of the Chicago-Ohio River Pool, held at Commissioner Richardson's office in Chicago, Jan. 10, the following resolutions were passed:

"*Resolved*, That the lines north of the Ohio River settle any overcharges that may have been agreed on pig iron destined to points as per resolution at Louisville, Ky., Feb. 5, and that this apply on business up to and including Jan. 31; also a basis of settlement of such overcharges shall be to prorate from such southern prorating points the net rate after deducting the bridge and initial railroad arbitraries, when such business originates at a local point of a connecting railroad.

"*Resolved*, That the Commissioner give the southern railways notice that, taking effect Feb. 1, the established arbitraries be charged from Ohio River points; also abrogating from that date the resolution passed at Louisville, Feb. 5, 1886, providing it is agreed and understood that all pig iron reported as sold prior to Jan. 31 shall be protected on present basis.

"*Resolved*, That no reduction shall be made from pool accounts in making such settlements."

Rates on Coal.

Commissioner Faithorn of the Western Traffic Association gives notice that the rate of 16.12 cents per 100 pounds upon coal, C. L., applying from East St. Louis, St. Louis and points north on either bank of the Mississippi River, to and including Dubuque, Ia., to Council Bluffs and Omaha, has been changed to 15 cents per 100 pounds.

Lake Superior Iron Ore.

The Marquette *Mining Journal*, which has kept for many years a very careful and complete record, gives the following statement of the total shipments of iron ore from the Lake Superior regions for the year ending Dec. 31:

	1886.	1885.	Increase.	P. c.
Marquette Range	1,609,118	1,430,422	178,696	12.5
Menominee Range	872,201	680,435	191,766	28.2
Gogebic Range	756,281	119,766	636,515	531.5
Vermillion Range	304,396	225,925	78,471	34.7
Total	3,541,996	2,456,548	1,085,448	44.2

The Gogebic Range made its first considerable shipments in 1885 (although 1,022 tons were sent out in 1884), and did not begin to ship heavily until last year, when its railroad connection was fully opened. The Marquette Range made all the shipments up to 1877, when the Menominee Range was opened. The Vermillion Range began shipping in 1884.

The total shipments for 10 years past are given by the *Mining Journal* as below:

	Tons.		Tons.
1886	3,541,996	1881	2,305,647
1885	2,466,548	1880	1,876,225
1884	2,518,892	1879	1,369,493
1883	2,344,313	1878	1,113,110
1882	2,967,495	1877	1,015,087

Shipments prior to 1877 were 8,365,623 tons. The total quantity of iron ore sent out from the first opening of the region up to Dec. 31 last was 29,774,099 tons. Last year's shipments were larger than those of any previous year.

Dressed Beef Rates.

The dressed beef shippers submitted arguments to the Eastbound Classification Committee in Chicago, Jan. 19, in favor of an amended basis of rates on dressed meats. The Committee declined to take any action.

RAILROAD LAW.

The Statute of Limitations.

A decision has been rendered by the United States Supreme Court in the case of Edward Kirby, executor, against the Lake Shore & Michigan Southern Railroad Co., the New York Central Railroad Co. and others: appeal from the Circuit Court of the United States for the Southern District of New York. The object of this suit is to obtain a decree setting aside, on the ground of fraud, certain settlements of accounts had by the firm of J. T. & G. D. Alexander & Co. with the several railroad corporations. The railroad companies maintained that the suit was barred by the statute of limitations, and the court below sustained this view on the ground that the statute began to run from the time when the alleged fraud was committed. This court is of opinion that the lower court erred in holding that the statute of limitations began to run from the time when the fraud was committed and not from the time when it was discovered. This Court holds that in the case of concealed fraud the statute does not begin to run until the fraud has been discovered. It holds, however, that this suit was not brought in time even after the discovery of the fraud and upon the most liberal construction of the statute. The decree of the circuit court is therefore affirmed.

New York Railroad Commission—Authority to Order Station Built.

The New York Court of Appeals has rendered a decision that the Railroad Commissioners cannot compel the erection of a station by a railroad company. The commission had directed the New York, Lake Erie & Western to erect a station at Hamburg, Erie County, and upon their refusal a motion was made by the Attorney General to compel the company to comply with the order. The General Term directed that a peremptory writ should issue compelling the company to erect the station. The Court of Appeals reverses the order and denies the motion.

Pennsylvania Pool Suits.

The taking of testimony in the commonwealth's suit against the coal and railroad pools closed in Philadelphia last week. The commonwealth asked for the annual reports of each of the defendants as far back as 1882, and these were pledged to be produced by counsel. The present testimony will be submitted to the new Attorney General, who assumes his office this week, and he will decide whether he will proceed to argument with the testimony at hand or endeavor to increase it.

OLD AND NEW ROADS.

Alabama Great Southern.—In the case of this company against the Tennessee & Coosa Railroad Co., the Secretary of the Interior has affirmed the decision of Commissioner Sparks of July 23, 1883, that a six mile tract of the grant to the state of Alabama by an act in 1856, to aid in the construction of the Tennessee & Coosa, was not subject to selection by the Alabama & Chattanooga Co., to which the present company is successor, although the Tennessee & Coosa road has never been constructed. The decision is made on the ground that the grant in question has never been forfeited by Congress.

Arizona Mineral Belt.—Ground was broken in December at Flagstaff, Ariz., on this road, and work will be pushed rapidly southward. For the first 75 miles the road will pass through a fine forest, and then for nearly 200 miles through a mineral belt.

Atchison, Topeka & Santa Fe.—Contracts have been awarded for building the extension of this road from Sibley, Mo., where it will cross the Missouri River, to Fort Madison, Ia. These contracts have been awarded in 50 mile sections, and work will commence as soon as the weather permits. The line is to be known as the Chicago, Santa Fe and California, and the intention now is that it will be completed next fall. The contracts for the construction of the line from Fort Madison, Ia., to Streator, Ill., have been made, and the iron to be used on the latter section is now being delivered. Work on the bridge across the Missouri at Fort Madison is to begin in the spring, the contracts for the same having been given. From Streator to Chicago the company will use the Chicago & St. Louis road, which was purchased by the Chicago, Santa Fe & California a short time ago. It is the intention to have the entire line from Chicago to Kansas City ready for business by next October.

In the district court at Larned, Kan., two suits for damages have been decided against this company. David Clark received a judgment for $62,000 worth of property which was destroyed by fire, and $15,000 for the loss of his wife, who was burned in the fire. (The ratio of these awards seems hardly complimentary to Mrs. Clark.) William Sly also recovered judgment from the company for $25,000 for personal injuries.

It is reported that this road will enter St. Louis, over the St. Louis, Kansas City & Colorado, of which it has acquired control. The latter road will be pushed right through to Kansas City, and will be completed to Union, in Franklin County, Mo., within 60 days. The Atchison, Topeka & Santa Fe will not be openly known as its owner till its completion to Kansas City.

Fourteen surveyors of this company are surveying a preliminary line from Mendin, Chariton County, Mo., to connect with the survey at Hardin, Ray County. The road will probably run through Carrolltown, Mo., and as far west as Camden, thus making the shortest route from Kansas City to Chicago

Atlanta & Alabama.—The incorporators of this company met at Atlanta, Ga., last week, and it was determined to apply to the next General Assembly of Alabama for a charter to extend this road from the eastern boundary of Randolph County, Alabama, direct to Selma. A committee was appointed to go to the capital for the purpose. The counties through which the road will run are Fulton, Campbell, Douglass, Carroll, Heard, in Georgia, and Randolph, Clay, Tallapoosa, Coosa, Chilton, Autagua, and Dallas, in Alabama.

Atlantic & Danville.—This road is being extended from Belfield to Danville, Va., a distance of 125 miles. Cost of construction will amount to $1,250,000.

Baltimore & Ohio.—This company has issued a new loan of $2,500,000, to be known as the car-trust loan, the money to be used in providing additional rolling stock. The loan will be secured by a mortgage of rolling stock now owned and that which is to be built. Bonds will bear 4½ per cent. interest, payable semi-annually, and they will be redeemed in ten installments, or $250,000 at the end of each year. The bulk of the loan is taken in Baltimore.

Bartow & Plant City.—This company has been incorporated in Florida, to build a road from Bartow, Fla., to Plant city, a distance of about 20 miles.

Canadian Railway Commission.—At a meeting held in Montreal last week it was shown by sworn witnesses that the railways had been discriminating against Montreal to such an extent that the city's flour and grain trade had been almost driven away. The through rates to the maritime provinces from points in Eastern Ontario had been in some cases $25 per car less than the local rate. There was a discrimination of 12 cents per barrel against the Montreal merchant bringing flour from Toronto and sending it to places in Quebec. The trade from Montreal to Newfoundland had been destroyed almost completely, in fact reduced from an annual shipment of 100,000 barrels to 15,000. The establishment of a Board of Railway Commissioners to adjudicate immediately on the matters in dispute was declared to be a desideratum.

Central Pacific.—The extension of the Oregon Division is now completed to Edson, Cal., 64 miles north of Delta and 272 miles from Sacramento. From Edson to the Oregon line by the route adopted the distance is 40 miles. The Oregon & California road now has its southern terminus at Ashland, 25 miles north of the state line, so that 65 miles of road are still to be built to complete the rail connection between San Francisco and Portland. Trains are now running regular to Edgewood, 57 miles north of Delta.

Chattaroi.—Work has begun on the extension of this road from Richardson, Ky., south. A large force of men is employed on the road from Richardson to Paintsville, Ky. It is expected that the first half of the extension will be finished by June 1, and the other half about two months later.

Chicago, Burlington & Northern.—This company will extend its Galena Branch from Galena, Ill., to Shullsbury, Wis., about 15 miles, forming a junction with the Monroe branch of the Chicago, Milwaukee & St. Paul.

Chicago, Burlington & Quincy.—It is reported that this company has sold $11,000,000 4 per cent. bonds at 95½, the purchasers being a syndicate headed by Lee, Higginson & Co., and Kidder Peabody & Co.

Chicago, Kansas & Nebraska.—This company, which is building the extensions of the Rock Island road in Kansas and Nebraska, has the southwestern line completed to a point 30 miles southwest from Horton, Kan., the junction with the northwestern line. The grading is nearly completed to Topeka.

Chicago, Milwaukee & St. Paul.—This road is graded between Ottumwa, Ia., and Chillicothe, Mo., a distance of 130 miles, and about 40 miles of track are laid. About 66 per cent. of the line between Chillicothe and Kansas City is graded, and the remainder will be finished by April 1. Over the Missouri River at Randolph the company is building a steel and iron bridge, which will be completed by July 1, at which time the line will probably be open for business. The company's entrance into Kansas City is made over the belt line, and 8 acres of land have been bought, upon which will be built the passenger depot. There are 90 acres of land at the west end of the proposed bridge, which will be used as freight yards.

This company is offering an additional $4,000,000 of the 5 per cent. first mortgage bonds of its Chicago & Pacific Western Division. The price in London and New York is 108½.

Chicago, Paducah & New Orleans.—This company has filed articles of incorporation in Illinois and Indiana. Capital, $10,000,000. It is proposed to run the road from Chicago in a southeasterly direction to a point on the Ohio River in Massac County, at or near a point opposite Paducah, Ky. Business offices are at Chicago.

Chicago, St. Paul & Kansas City.—Agents for the Des Moines and Kansas City extension of this road are engaged in buying the right of way through Union and neighboring counties in Iowa. Active work will be begun on this extension as early as possible in the spring, and the company promises that the road will be completed to St. Joseph, Mo., this year.

Cincinnati, Georgia & Florida.—The line of this road having been located from Boyce Station, on the Cincinnati Southern, 4 miles east of Chattanooga, Tenn., thence 30 miles southwest to a point in Walker county, Ga., near Lafayette, the engineers are now proceeding through Walker and Chattooga counties to the Alabama and Georgia line, in the direction of Anniston.

Cincinnati, Hamilton & Dayton.—This company has received 2,000 tons of new steel rails from Carnegie & Co., of Pittsburgh. The rails are distributed along the line, and will soon be laid. The company has also closed contracts for 1,250 coal cars to be furnished by the Litchfield, Ill., Car Works and the Indianapolis Car Works.

Cincinnati, Wabash & Michigan.—In a suit for damages against this company by the Benton Harbor Plow Works, whose factory was burned in 1883, by a spark, so the plaintiff alleged, from a locomotive belonging to the railroad company, a verdict has been obtained by the road, at Centreville, St. Joseph County, Ind.

Cleveland, Akron & Columbus.—This company is to equip all its passenger engines with the American electric locomotive headlight.

Columbus & Eastern.—Since Jan. 1, 1886, this company has laid track as follows: From Fultonham to Cannelville, main line, 19 miles in Muskingum County, Ohio; from Redfield to Coyles, Buckeye Branch, 2 miles in Perry County, O.; from Alum Creek Junction to Union Depot, Columbus, Columbus Terminal, 5 miles, in Franklin County, O., making total track laid during 1886, 26 miles.

Current River.—This company has filed articles of incorporation at Jefferson City, Mo., and a charter has been issued thereon. The road will be constructed as follows: Commencing at a point on the line of the Kansas City, Springfield & Memphis road at Willow Springs, in Howell County, Mo., thence in an easterly direction through the counties of Howell, Shannon, Carter, Ripley, Butler, Stoddard, New Madrid, Scott and Mississippi, all in Missouri, to a point on the Mississippi River opposite the city of Cairo, Ill. The length of the road is about 170 miles. The capital stock is $1,700,000. The organization is controlled by the Kansas City, Fort Scott & Gulf.

Delaware, Lackawanna & Western.—It is said that this company is arranging to extend its lines to Rochester, N. Y., from the neighborhood of Mount Morris, by way of Conesus and Hemlock Lakes. This has been reported several times before.

Denver & Rio Grande.—The contract for the extension of this road from Redcliff to Glenwood Springs, Col., a distance of 60 miles, has been let to Carlisle, Price & McGaveck, of Pueblo, Col., at the price of $2,000,000. Work will begin immediately. the road to be finished by August 1.

This company has contracted for the extension of its road from Red Cliff, Col., to Glenwood Springs for $2,000,000.

Diagonal Trunk.—A meeting of this company's directors held last week at Kansas City, Mo., for the purpose of perfecting the organization and discussing the feasibility of immediate work. President Jones states that the capital stock of the road is $20,000,000, and the Kansas Division is to be completed within the next two years. After leaving Lincoln, Neb., the road will enter Kansas through Sewell County, thus running straight to the southwest corner of the state, and from thence through No-Man's-Land to El Paso, Texas.

Dubuque & Sioux City.—As holders of about 14,000 shares of this company's stock, E. H. Harriman & Co., of New York, applied to John Paton & Co., local transfer agents of the company, and the Metropolitan Trust Co., its local register of transfers, for permission to inspect the transfer-books and list of stockholders. Permission was refused. Judge Lawrence has granted E. H. Harriman & Co. their motion for a peremptory mandamus to compel the exhibition of the books.

Duluth, South Shore & Atlantic.—There are four parties of surveyors locating this line in and about the Gogebic country in Michigan. The line touches the foot of Gogebic Lake and runs in a southwesterly direction to a point about 2½ miles from Bessemer, passing through the centre of town 48, range 44; thence a little south of the centre of town 48, range 45, crossing the Black River in section 35-48-49. Here the course runs directly west until the Montreal River is crossed in the southwest corner of town 48, range 47. A similar southern detour is made at the east end of Gogebic Lake. Brown, Howard & Co. have agreed to have the entire line finished by next December. From Duluth, Minn., to Sault Ste. Marie, the road is 240 miles long.

East Tennessee, Virginia & Georgia.—It is reported that the block of preferred stock (a majority of the whole) which has been for sale for some time, has at last been sold to the Richmond & West Point Terminal Co. for $6,000,000, payable $4,400,000 in cash, the balance by 40,000 shares of Terminal stock at 40. This block carries with it the control of the road for five years, as, under the plan of reorganization, the common stock has no voting power for that period.

Flint & Pere Marquette.—Suit has been begun against this company in the Circuit Court at Detroit by the representatives of the common stock. The complainants allege that they have been denied all privileges as holders of this stock, not being allowed to see the accounts, which, it is charged, have been kept wholly in the interests of the preferred stockholders. Dividends on preferred stock have ranged from 4 to 7 per cent., while it is claimed that 7 per cent. might have been declared annually, when it would have been the duty of the company to issue common stock. It is demanded that the books of the company be produced

for examination. Under the agreement of reorganization 7 per cent. dividends were to be declared on preferred stock for 3 consecutive years before the common stock should be paid or have voting power.

John A. Hewitt, who was formerly an employé of this company, has obtained a verdict against it to the amount of $22,000. In 1883 Hewitt was injured in a collision with a flat car which had been blown from a siding to the main track. He sued for $50,000, with the above results. The case will be carried to the Supreme Court.

Fort Worth Western.—The stockholders of this company will meet in Fort Worth, Tex., March 17, to consider the issuance of first-mortgage bonds at the rate not to exceed $15,000 to the mile, bearing 6 per cent., payable semi-annually in gold.

Grand Trunk.—The statement for November and the five months from July 1 to Nov. 30, as published in London, is asfollows:

	November		Five months	
	1886.	1885.	1886.	1885.
Earnings	£309,023	£263,126	£1,589,664	£1,355,024
Expenses	226,259	206,958	1,097,557	1,029,377
Net earnings	£82,764	£56,168	£492,107	£325,647

For the five months the gross earnings increased £234,540, or 17.3 per cent., and the expenses £68,180, or 6.6 per cent., leaving a gain in net earnings of £166,460, or 51.1 per cent.

For the five months the controlled lines west of Detroit make the following showing:

	C. & G. T.		D., G. H. & M.	
	1886	1885.	1886.	1885.
Earnings	£274,093	£228 932	£118.899	£113,301
Expenses	202,104	193,001	75,735	76,837
Net earnings	$71.989	£35,931	£43,164	£36,464

The Chicago & Grand Trunk for the five months had an increase in gross earnings of £45,161, or 19.7 per cent.; in net earnings of £36,058, or 100.4 per cent. The Detroit, Grand Haven & Milwaukee shows an increase of £5,598, or 4.8 per cent., in gross earnings, and of £6,700, or 18.4 per cent., in net earnings.

Great American & European Short Line.—This line was originally projected about four years ago to extend from a point near Moncton, N. B., *via* the north shore of Nova Scotia to Port Mulgrave, on the west side of the Strait of Canso. Trains were to be transferred by steam ferry from Port Mulgrave to Port Hawkesbury on the Cape Breton side, and a line of railroad was to be constructed from Port Hawkesbury to Cape North, the most easterly point in Cape Breton. Then a ferry was to be provided between Cape North and Cape Ray in Newfoundland, about 55 miles, and from this point it was proposed to build a line of road to St. John's, Newfoundland. Thus passengers and mail could be landed at St. John's and sent to their destination in Canada and the United States by rail. Charters were obtained from the several legislatures. Subsidies were provided by the Dominion Government for portions of the line. One division in Nova Scotia, 70 miles in length, was put under contract, but after part of it had been graded, the company ceased operations. Statements have been published recently concerning the active construction of the road across Cape Breton, thus perfecting the short route European project. It seems, in truth, that this line is being undertaken as a Dominion Government work, more to develop the agricultural and mineral resources of the Island of Cape Breton, than with any expectation of its becoming a through and connecting line. Up to date no work has been done on any part of the line in Cape Breton. Tenders have been called for 45 miles, or one-half of the projected line. No contracts have yet been awarded. The exact location of the line has not been settled on. There seems to be no ground for the statement recently made about the construction of the road between Harbor Grace and Placentia in order to connect the latter place with St. Johns in the short line scheme; in fact Harbor Grace is not on the line between the two places. There appear to be some quite insurmountable drawbacks to the materialization of the very pretty idea, for the fact is that no port in Cape Breton is open for navigation the whole year round, while the Strait of Canso is liable to be blocked with ice for protracted spells. The country between Cape Ray and the east coast of Newfoundland is almost uninhabited and uninhabitable, and there would be little or no local traffic. The line as projected in Nova Scotia and Cape Breton seems more feasible. Dr. Norvin Green, of New York, has been the chief promoter of this road.

Gulf & Ship Island.—Ground was broken on this proposed road at Hattiesburg, Miss., Jan 12, and several hundred convicts were put at work grading the road bed.

Hartland.—The Maine Railroad Commissioners have approved the articles of agreement for the extension of this road from the south line of Harmony to the north line of the town of Wellington, a distance of about 15 miles. From Wellington the road will be pushed to Monson Junction, where a connection will be obtained with the Bangor & Piscataquis and the Monson roads, and a short route will be furnished to Moosehead Lake, obviating the necessity of going to Bangor. Capital stock of the company is $400,000, of which $26,000 has been raised by the town and individuals along the line, and the balance by parties abroad.

Illinois Central.—An adverse decision has been given in this company's suit against the Baltimore & Ohio to recover possession of some land near the Illinois Central's passenger station in Chicago, occupied by freight houses belonging to the Baltimore & Ohio. The suit was over a misunderstanding of an old lease, the terms of which the Illinois Central said had not been lived up to.

A special meeting of this company's stockholders was held this week in Chicago for the purpose of increasing the capital stock from $29,000,000 to $30,000,000. Out of 189,148 shares represented 174,078 voted for and 15,070 against the issue. The proceeds are to be applied to the payment of $500,000 for elevator property at Chicago, double tracking the line to Kankakee and buying car equipment.

Contracts for the grading, bridging, etc., of this company's extension from Freeport, Ill., to Chicago, have been let to the following parties: Ryan & McDonald, Monroe, Wis.; Huzelgren & Co., Freeport, Ill.; J. C. Dunlap, Monroe, Wis.; Drake & Stratton, Dayton, Wis., and W. E. Darwin & Co., 112 Randolph street, Chicago.

The Land Department reports 955 acres of land sold for $9,387 during the months of November and December. Collections on land accounts amounted to $16,847 for the two months.

Illinois Midland.—The Purchasing Committee of this road has made the first payment of $400,000 to the Commissioner, who is to apply the money for the payment of taxes and other first preferred claims. Two more payments must be made by the purchasers—one Feb. 1 and the other March 1, 1887. The committee hopes to get control of the road after the second payment.

Iron Mountain & Helena.—A. H. Johnson, former contractor for 18 miles of this road, has been put in possession of that part of it on a writ of restitution granted by the District Court of Arkansas, and now sustained by the Supreme court. He had been forcibly dispossessed of his title by the railroad company, and the Justice held that violent measures in such cases must never be countenanced. The road is now a part of the Missouri Pacific system.

Jacksonville, Tampa & Key West.—The Tavares Division (formerly the Sanford & Lake Eustis road) is now completed and opened for business from Sanford, Fla., west to Tavares, 29 miles.

Kansas, Colorado & California.—This company has filed articles of incorporation in Kansas, and proposes to build a road from a point near the centre of Ellsworth County, Kan., to a point where the west line of the state crosses the Arkansas River in Hamilton County, to connect with a road of the same name in Colorado, and thence southwest through that state and the territory of New Mexico to Albuquerque. The road will run through the counties of Ellsworth, Russell, Barton, Bush, Ness, Lane, Scott, Wichita, Finney and Hamilton. Estimated length of road, 600 miles. Headquarters of the company at Coolidge, Kan. Capital stock, $10,000,000.

Louisville, St. Louis & Texas.—Work has begun at Rockhaven, Ky., on this road, which is to run from Louisville to Henderson, Ky., along the south side of the Ohio River.

Metropolitan Transit Co.—This is a company that hopes to build an elevated road in Broadway, New York. Its present charter gives it the right of way to Forty-third street, and thence to the Grand Central Station. A decision is now awaited from the General Term of the Supreme Court which will settle the questions of the appointment of a commissioner to determine what sum the company should pay the city for the use of the streets, and whether any other road, or any private individuals, have any right to appear in the matter. It is the purpose to erect an attractive structure of steel, with the pillars on the edge of the sidewalk and the tracks over the centre of the street, and the motive power will be either electricity or the cable. Robert Bliss is the President of the company, and General Wingate the counsel.

Michigan & Ohio.—This company is to be reorganized and will consolidate with the Cincinnati, Jackson & Mackinaw. The latter is an incompleted road from Franklin, Ohio, north to Eaton, and projected to extend 70 miles north to Jackson on the Michigan & Ohio. A syndicate has been formed to buy the Cincinnati, Jackson & Mackinaw after its completion. The syndicate will then issue new securities, a first 5 per cent. 50 year mortgage at the rate of $10,000 per mile, with $30,000 of common and $30,000 of preferred stock. The issue of bonds will be $3,400,000.

Minneapolis, Sault Ste. Marie & Atlantic.—The engineers have located the line of this road to the terminal grounds in Minneapolis. As laid out, the road will connect with the Northern Pacific tracks at a short distance east end of the Northern Pacific bridge.

Missouri Pacific.—Mr. Jay Gould states that General Manager Clark has been authorized to call for plans for a new Union Depot from St. Louis architects. It is to be situated between Twelfth and Fourteenth streets in that city. It is proposed to build it 600 ft. in length, with east and west entrances, and will cost upward of $1,000,000.

It is reported that this company has acquired control of the St. Louis, Arkansas & Texas road (Texas & St. Louis), and that the principal object of Jay Gould's southwestern trip is to perfect the new deal. The road runs from Cairo to Texarkana, Texas, distance 418 miles, and has branches from Paw Paw Junction to New Madrid, 5.70 miles; from McNeill to Magnolia, 6.81 miles; and from Texarkana to Gatesville, 305 miles, making a total mileage of about 735.

This company is building a road from its Topeka, Salina & Western branch in Kansas, down through Rice County to Hutchinson, in Reno County. Tracklaying has been completed as far as Sterling, a distance of about 30 miles. A connection will be made at Hutchinson with the Wichita & Colorado line of the same company.

This company, it is said, will extend its lines northward from Omaha, Neb., with a terminus at Yankton, and branches into the Elkhorn territory.

Montreal, Portland & Boston.—Judge Mathieu has decided that Mr. J. L. Morris, as purchaser of those 7,924 shares of this company's stock owned by Mr. Bradley Barlow, was entitled to be placed on the shareholders' list, and that his demand to protect Mr. Barlow's voting on these shares must be granted.

Nashville, Chattanooga & St. Louis.—The statement for December and the six months of the fiscal year from July 1 to Dec. 31 is as follows:

	December.		Six months.	
	1886.	1885.	1886.	1885.
Earnings	$229,946	$193,327	$1,319,969	$1,107,309
Expenses	132,613	118,515	766,356	659,220
Net earnings	$97,333	$74,812	$553,613	$448,039
Interest and taxes			355,586	338 015
Improvements of property			35,578	28,984
Total charges			$391,164	$366,999
Surplus			$162,449	$81,060

For the half-year this shows an increase in gross earnings of $212,669, or 19.2 per cent.; an increase in net earnings of $105,554, or 23.5 per cent.; an increase of $81,389, or 100.4 per cent., in the surplus.

New Castle Northern.—The sale of this unfinished road in Western Pennsylvania has been affirmed, and the Receiver has been ordered to make a deed for it to Geo. W. Johnson, the purchaser, unless exceptions are filed before Jan. 28, 1887.

New Haven & Northampton.—There is a report of this road forming an alliance with the Central Massachusetts to build a western connection for the line, independent of the Hoosac Tunnel and the Troy & Greenfield. The project contemplates the construction of a line from the former terminus of the road, Williamsburg, Mass., over the Berkshire Hills to the New York state line, and there connect with the Boston, Hoosac Tunnel & Western. Such a line would be 45 miles long, and its estimated cost is placed at $2,500,000.

New York, Chicago & St. Louis.—Current report is that negotiations for a settlement are in progress, and that a proposition has been made to the effect that a new company shall be organized and shall issue $20,000,000 in 4 per cent. bonds to take up all the existing debt. The stock of the new company is to be $11,000,000 preferred and $14,000,000 common, the old stockholders to receive one-half their present holdings and to pay an assessment.

The official statement is that these reports are premature, although it is not denied that a compromise proposition has been made and is under consideration.

New York, Ontario & Western.—There is some talk of this company building a line of road from Rome, N. Y., up through Lewis County, with stations at Louisville, Houseville and Constable, N. Y. Unless satisfactory arrangements can be made with the Rome, Watertown & Ogdensburg for the mutual transportation of freight from this section, it is likely that the project of a new independent line will soon take definite shape, and be acted upon by this company.

At the annual meeting in New York, Jan. 19, the contract with the New York Central and the West Shore companies was ratified and approved.

Niagara Falls & Whirlpool.—This company is finding great difficulty in obtaining right of way down the river gorge below the falls. Property owners are very outrageous in their demands. People have sworn in court that a certain piece of property near Suspension Bridge, which recently sold for $6,500, is now worth $85,000. Parties are engaged in buying up property along the line in order to come before the commission and claim damages. In one case a piece of about 200 ft. front that had been bought in this way was valued at upward of $500,000. The commission is at work steadily on the appraisal, and it is expected that construction work will commence in the spring.

Norfolk Terminal Co.—This company's grain elevator at Lambert's Point, Va., will be ready for service some time this month. It has a capacity of 150,000 bushels, and can be emptied in 12 hours.

Northern Pacific.—The demurrer to the petition of this company to be allowed $8,000 for being obliged to carry Wells, Fargo & Co.'s express, was sustained in the U. S. Circuit Court, at Portland, Oregon. When the railroad company endeavored to put Wells, Fargo & Co. off their lines they were enjoined, and continued to afford facilities to the express company till they withdrew, being paid the usual compensation for this service. Now they ask for $81,000 damages. They have 80 days in which to submit an itemized bill.

August Belmont & Co., of New York, have purchased $1,000,000 first mortgage bonds issued against the Cascade Division of this company. The price is said to have been between 115 and 116.

Ohio & Mississippi.—A meeting of the holders of the pool certificates of the Springfield Division bonds of this company was held in Baltimore last week, and the bondholders' committee reported through Mr. Skipwith Wilmer, Chairman. The report detailed the circumstances under which the bond pool was made last March. The railroad company wanted to surrender their Springfield Division property or to give 5 per cent. bonds in lieu of the 7 per cents. The bondholders believed they had a valid claim. A pool was formed and the holders of nearly a million of the bonds deposited them with the Safe Deposit and Trust Co., of Baltimore, and received pool certificates for them. The bonds were assessed $5 on the $1,000 to meet the expenses of the committee. Counsel were retained in Illinois and Ohio, and the railroad company was notified that in the event of default on the bonds, application would be made to the U. S. Courts to have the whole road placed in the hands of receivers. The railroad commissioners of Illinois ascertained that the Springfield Division was not being kept up, and the Attorney General brought suit to require the company to put it in good condition. At the annual election for directors of the Ohio & Mississippi last October a change was made on the board, and the policy toward the Springfield Division was abandoned.

The company issued a circular, saying that the interest on all the bonds would be paid, and the committee was given to understand that the opposition to the full recognition of the Springfield bonds was ended. The committee have collected and paid $65,000 in interest to the bondholders, and the bonds have increased $200,000 in value on the stock exchanges. The expenses of the committee for counsel fees, etc., were about $1,900, and there are $2,800 of the assessment in hand. The committee recommended that the bonds be returned to the holders as their standing is recognized by the company and the pool is no longer necessary. A resolution was adopted that the committee should instruct the Safe Deposit Company to return the bonds to the holders of the pool certificates on their presentation and that the pool committee be dissolved, with the understanding that the organization can be renewed if necessary. The committee were Messrs. Wilmer, Henry W. Archer, Henry Janes, H. Irvine Keyser and the late Robert T. Baldwin. The meeting voted $100 to each of the committee. Mr. Enoch Pratt was chairman of the committee.

Ohio River.—The first through train over this road, connecting at Point Pleasant, W. Va., with the Kanawha & Ohio, made the run from Wheeling, W. Va., in 12½ hours. The extension recently completed from Parkersburg, W. Va., to Point Pleasant, is 79 miles long, making the total length of the road from Wheeling to Point Pleasant 173 miles. An extension from Point Pleasant to Huntington, to connect with the Chesapeake & Ohio, is proposed.

Omaha, Lincoln, Hartland & El Paso.—Steps are being taken toward the construction of this road, which, as projected, will start at Omaha, running thence to Lincoln and through the countries of Lancaster, Saline, Fillmore, Thayer and Nuckolls, in Nebraska, and Jewell, Smith, Osborne, Rooks, Ellis, Trego, Grove, Lane, Scott and Finney, in Kansas, to Hartland, in Hamilton county. Then through Hamilton and Stevens counties, Kansas, No Man's Land, Sherman, and Hartley counties, Texas, and the counties of Mora, San Miguel, Lincoln and Dona Ana, in New Mexico, to El Paso, Texas. The charter was issued on Nov. 8, 1886, and the first meeting of the board of directors for the purpose of perfecting the organization, arranging for the sale of stock, the issuing of the bonds, etc., has just been held in Kansas City. At the meeting arrangements were made for running the preliminary survey as soon as the weather will permit. The road will be about 950 miles in length. Capital stock has been fixed at $20,000,000. Among those interested in the undertaking are: L. S. Jones, of Hartland, Kan., President of the company; Hon. Benjamin Bowen, of Hartland, Kan., Secretary; A. H. Weir, Lincoln, Neb.; C. M. Desislets, of Belvidere, Neb.; Gen. Frederick De Funiak, W. S. Francis, S. B. Voris and C. R. Kelly, of Louisville, Ky. The next meeting of directors will be held at Lincoln, Neb., on the first Wednesday in February.

Oregon & California.—Negotiations for the sale of the properties of the Oregon & California Railroad Co. to the C. P. Huntington interest, which have been pending for nearly three years, have at last been brought to an end by the conclusion of a definite contract between Mr. Andrew Haes, of the firm of Haes & Sons, acting for the London Committee of Bondholders, and Mr. Huntington, acting for the Southern Pacific Co. and the Pacific Improvement Co. The terms of the agreement are substantially as follows:

The Oregon & California first-mortgage bondholders are to receive at the rate of 110 in exchange for their present bonds new 40-year gold 5 per cent. bonds, guaranteed both principal and interest by the Southern Pacific Co., together with £4 sterling in cash for each old bond. These new bonds, to be issued at the rate of $30,000 per mile, are to be secured by a new mortgage equivalent in point of lien and priority to the existing first mortgage of the Oregon & California, and will bear interest from July 1, 1886.

The Oregon & California preferred stockholders will re-

ceive one share of Central Pacific stock for every two shares of their own stock, together with 4 shillings sterling for each preferred share, and the common stockholders will get one Central Pacific share for every four of their own shares, together with 3 shillings sterling for each common share.

Oregon Improvement Co.—The statement for the fiscal year ending Nov. 30, is as follows, including all the operations of the company, railroad, steamship, coal and land departments:

	1886.	1885.	Inc. or Dec.	P. c.
Earnings	$2,934,818	$2,881 957	I. $52,861	1.8
Expenses	2,208,815	2,270,041	D. 61,226	2.7
Net earnings	$726,003	$611,916	I. $114,087	18 6
Per cent. of exps.	75.3	78.8	D. 3.5	...

The fixed charges last year were $350,000, leaving a balance of $376,003 as surplus for the year.

Pennsylvania.—A report comes from Philadelphia that the conferences between officers of this company and the Philadelphia & Reading have finally resulted in an agreement by the Reading to open the coal districts freely to the Pennsylvania and to abstain from any measure detrimental to the latter road in these regions. All producers will be permitted to ship their coal as they choose. This concession of the Reading will give the Pennsylvania an annual coal traffic over its new Schuylkill Valley road of 1,000,000 tons.

In return for the privileges thus conferred, the Pennsylvania has agreed to maintain rates in the Schuylkill Valley and also to withdraw the strenuous opposition that it has heretofore raised against the Baltimore & Ohio going to New York over the Bound Brook and Jersey Central lines. Further, in pursuance of this arrangement, the Pennsylvania has abandoned the policy of acquisition of coal lands, and stopped purchases partly made.

Philadelphia & Reading.—The new plan of reorganization, under the auspices of the income bondholders and dissatisfied general mortgage people, will, it is said, be given to the public this week. The object which the promoters expect to attain by this plan is the correction of what are thought to be errors in the syndicate scheme, and chiefly to offer the creditors a plan which will keep intact, as far as possible, the priorities of the different liens and mortgages.

Special Master Dallas reports to the Court that a claim of the Pennsylvania Steel Co. for $226,680 for rails furnished for the Philadelphia & Atlantic City road is not properly a claim against this company, and receivers' certificates should not be issued for it.

Pontiac & Pacific Junction.—This company will apply to the Dominion Government for leave to open the road to public traffic. It now extends from Aylmer in Quebec to Pembroke, Ont., a distance of 85 miles. It is intended to extend the line from Pembroke to Couligne.

Portland & Ogdensburg.—The new corporation formed by this company's bondholders has assumed control of this road under a decree of strict foreclosure. The city of Portland, Me., is the principal owner.

Pullman's Palace Car Co.—In the case of this company against the state of Iowa, asking for an injunction to prevent the state from collecting a tax from the railways for the use of sleeping cars, Judge Brewer at Des Moines, Iowa, denies the application and sustains the state.

Richmond & Danville.—The Railroad Commissioners have fixed new rates for all of the line in South Carolina that belongs to this system. The rates will be made on the basis of those now in force on the Charlotte, Columbia & Augusta railroad. This will lower some of the high local rates. The change goes into effect on February 12.

Richmond & West Point Terminal Co.—This company has agreed to buy the block of 60,000 shares of East Tennessee, Virginia & Georgia preferred stock, which has been on the market for some time, at par, the $6,000,000 required being payable $4,400,000 in cash and $1,600,000 in terminal stock at 40. This will require the issue of $4,000,000 new stock.

At a meeting held this week the Terminal directors authorized the issue of $14,000,000 new stock, $4,000,000 to be issued for the purpose of paying for the East Tennessee stock, and $10,000,000 to provide for the purchase of the Richmond & Danville stock not already owned by the company. For this stock, 25,000 shares, holders are offered Terminal stock at the rate of 4 shares for one of Richmond & Danville. To provide for the cash payment on the East Tennessee stock and for other purposes, the directors authorized the issue of $8,500,000 new 6 per cent. collateral trust bonds, having 10 years to run. These bonds, it is stated, have been sold to a New York banking house.

These additions will make the total capital of the Terminal Co. $36,500,000 common stock, $5,000,000 preferred stock and $8,500,000 collateral trust bonds. The $510,000 yearly interest on the bonds will have to be provided for from the income on the securities owned by the company.

The 60,000 shares of East Tennessee preferred carry the control of that company for the present. The total issue of that stock is 110,000 shares, and, under the terms of the reorganization, it has the exclusive voting power until 1891.

Rome, Watertown & Ogdensburg.—The following statement is made for the quarter ending Dec. 31, the figures including the Utica & Black River road in 1886:

	1886.	1885.	Increase.	P. c.
Earnings	$782,243	$504,030	$278,213	51.2
Expenses	398,137	287,477	110,660	38.5
Net earnings	$348,106	$216,553	$167,553	77.2
Other income	7,915	7,455	460	6.1
Total	$392,021	$224,008	$168,013	75.0
Interest, rentals, etc.	255,571	157,958	97,613	61.8
Surplus	$136,450	$66,050	$70,400	106.7

The surplus Sept. 30, 1886, was $303,757, making a total of $440,207. On this showing it was decided to declare a dividend of 2½ per cent. (the first since 1875), which will require $112,625, leaving a balance of $337,582 on hand.

The company has given notice that it will retire the income bonds still outstanding.

St. Louis, Arkansas & Texas.—The portion of this road between Texarkana, Ark., and Gatesville, Tex., a distance of 305 miles, has been changed from narrow to standard gauge, thus making the entire length of the line from Cairo to Gatesville, which is 750 miles, the standard width.

A report is current that a controlling interest in the road has been sold to Jay Gould.

Sioux City & Pacific.—Governor Larrabee has certified back to the national government 2,601,733 acres of land situated in the counties of Plymouth, Woodbury and Osceola, Iowa. This land, together with other thousands of acres, was granted to the state for the purpose of assisting in the construction of certain railroads. The state in turn granted it to the Sioux City & Pacific conditionally upon that company fulfilling certain stipulated contracts. The obligations imposed upon the railroad before the land could be patented have never been fulfilled, and as a result this large tract has reverted to the state and is certified back to the government. The lands can in the near future be thrown open to settlement and will doubtless be quickly occupied. The Milwaukee & St. Paul Co. having acquired several of the land grant roads by purchase and completed every requirement imposed by the Legislature, has had the lands along the lines affected by the grant patented to it by the Governor.

South Atlantic & Ohio.—Tracklaying was begun on Dec. 20, 1886, and will be continued to the Clinch River, 44 miles distant from Bristol, Tenn., which place is the southern terminus of the road. It is expected that it will be completed to Big Stone Gap, Wise County this year, and to the "Breaks" in the Cumberland Mountain, the following summer. The road has been under construction, at intervals, for the past 30 years. The Virginia & Kentucky Railroad Co. was incorporated in 1853, by the General Assembly of Virginia, which appropriated $1,500,000 to its capital stock. This appropriation was made conditional upon the adoption of such measures in Kentucky as would insure a continuation of the line to the Ohio river. This and other causes delayed the organization until a year previous to the war. Extensive surveys were made of the whole country lying between the Tennessee and the Kentucky state lines, from Cumberland Gap to the "Breaks," where the Russell Fork of the Big Sandy River cuts its way through the Cumberland Mountains, and affords the only way to the Ohio River without the construction of long tunnels. When the war put an end to the operations, about $750,000 had been expended on the road. All but about $75,000, which the various surveys had cost, was spent in obtaining the right of way and in actual construction. After the war closed the Petersburg & Norfolk, the Southside and the Virginia & Tennessee railroads were consolidated under the name of the Atlantic, Mississippi & Ohio, and it was provided that this company should continue the construction of the Virginia & Kentucky road. Before any further work of construction was done this company became financially embarrassed, the road was sold and the company reorganized under the name of the Norfolk & Western Railroad Co. This rather unique railroad idea suffered a further development in 1876, when an act was passed by the legislature of Virginia incorporating the Bristol Coal & Iron Narrow Gauge Railroad Co. Among other franchises was a transfer of all the subscriptions which had been voted to the Virginia & Kentucky Co., in fact, making the latest corporation the successor to and owner of the old road. In 1882 the Legislature went at it again and changed the name of the company to the South Atlantic & Ohio, and under that name it is now being constructed.

Southern Pacific.—This company has laid 25 miles of track on the southern end of the new coast line, from Newhall, Cal., north by west. The work is progressing at the rate of one mile a day. The company has let contracts for 300,000 ties. Nearly all of the heaviest bridge work is now completed.

Ties have been distributed from San Bernardino, Cal., to Lytle Creek on the graded line of the road, and the rails will be laid at once. Ninety car-loads of steel rails are now on their way to be used in the construction of the line.

It is stated the negotiations for the purchase of the Oregon & California road by this company have finally been concluded, as noted elsewhere. This purchase will result in the pressing of work on the completion of the through rail line between San Francisco and Portland.

The earnings and expenses of this company for November were:

	Pacific system.	Atlantic system.	Total.
Earnings	$2,041,718	$783,290	$2,825,009
Expenses	1,213,119	544,709	1,757,828
Surplus	$828,598	$238,581	$1,067,180
Added rentals from leased lines			46,080
Total			$1,113,860
Less charges			1,211,114
Deficit			$97,254

Charges include interest, rentals, taxes, sinking funds and governmental requirements.

Strikes.—The strike of the coal handlers at the coal shipping points near New York still continues, and up to Jan. 18 shipments from the docks were altogether stopped, causing serious embarrassment and threatening a short supply of coal in New York and vicinity. On Jan. 18 the Delaware & Hudson and the Delaware, Lackawanna & Western put a number of new men at work under police protection, and succeeded in moving a considerable quantity of coal. On the Lackawanna road, however, the brakemen employed on the coal trains struck also, making further trouble. The attempt to work with new men will be continued, and the companies claim that they can get all they want.

The Receivers of the Central Railroad of New Jersey have applied to the United States Court for protection against the strikers, and the Court has ordered the appointment of deputy marshals.

Texas & Pacific.—The lawyers who have been retained by the Reorganization Committee of this road have gone to New Orleans to file the petitions in the United States Court there preliminary to the foreclosure proceedings which will thus be commenced.

Texas, Santa Fe & Northern.—The people of Santa Fe, N. M., celebrated quite extensively over the recent completion of this road to its connection with the Denver & Rio Grande, 38 miles north of Santa Fe. The road now affords competition with the Atchison, Topeka & Santa Fe to eastern points. The line will be extended from Santa Fe south to El Paso.

Toledo, Columbus & Southern.—Judge Welker has granted leave to J. C. King, at Toledo, O., to file an intervening petition in the case of the American Loan & Trust Co., against this company. King represents all the original creditors, who have claims aggregating $136,000.

Wabash, St. Louis & Pacific.—The Purchasing Committee of this company's bondholders have called on the holders of stock, general mortgage bonds and collateral trust bonds for some expression of opinion as to the advisability of paying an additional $1,000,000 to the Circuit Court for the Eastern District of Missouri, and taking the property west of the Mississippi out of the hands of its present receivers. The committee has already paid $625,000 to the Court, and wishes to gain control of the property outright. The Court has ordered $1,000,000 to be paid within 60 days from Dec. 31.

Judge Treat, of St. Louis, has directed the Receivers of this company to discontinue the executive and transfer officers in New York, and to stop all salaries, retaining but one room and one clerk to take charge of books and papers pertaining to the traffic business and property.

Zanesville, Mt. Vernon & Marion.—This company will increase its capital stock $3,500,000, and bonds to bear 6 per cent. interest and to run 40 years, secured by a mortgage on the road, will be issued immediately.

ANNUAL REPORTS.

Lehigh Valley.

The report of this company, as presented at the annual meeting this week, is for the year ending Nov. 30.

The capital stock is $33,219,100 and the bonded debt $25,458,000, while it has no floating debt. There were $201,000 of the sterling bonds paid off Dec. 1, which reduces the bonded debt to $25,257,000.

The total coal tonnage, the largest ever reported, was 6,701,786 tons, of which 6,656,474 tons were anthracite and 45,262 tons bituminous.

The income statement is as follows:

Earnings from all sources		$9,395,802
Working expenses		5,293,817
Net earnings		$4,101,985
Interest, rentals, taxes, etc.	$2,730,204	
Dividends, 4 per cent	1,331,531	
		4,061,735
Balance to profit and loss		$40,250

For the purpose of securing a considerable tonnage, which will pass over about 300 miles of the system, the company has purchased $200,000 of the first mortgage bonds of the Carthage & Adirondack Railway Co. to enable that company to complete its road between Carthage, N. Y., and iron ore deposits in the Adirondack region. This railroad of 40 miles is completed now and open for business.

In relation to other extensions the report says: "The extension of the Pennsylvania Railroad Co.'s Schuylkill Valley Railroad to and beyond Pottsville, and the desire on the part of that company to reach their own properties near Wilkes-Barre, made it necessary for us to consider the advisability of building a new line between New Boston and Hazleton. We entered into an agreement with the Pennsylvania Railroad Co., in accordance with which the road was put under construction and a portion completed, over which and the connecting road our trains are now run into Pottsville. As indicated in previous reports, we have at different times invested large sums of money in the securities of the Southern Central Railroad Co. of New York, to enable that company to make the necessary improvements for most efficiently conducting its business, and by which we were benefited in the increased trade derived from that source. It has been considered probable that its management might be more successful by attaching it to our general system, and, therefore, an agreement has been entered into with that company by which we are to run the road. Neither dividends nor interest are guaranteed, they being contingent upon the earnings."

Cleveland & Canton.

This company owns a line from Cleveland, O., to Canton and Coshocton, with some short branches, 161 miles in all. The report is for the year ending Dec. 31.

The earnings for the year were as follows:

	1886.	1885.	Inc. or Dec.	P. c.
Earnings	$358,219	$291,916	I. $66,303	22.7
Expenses	281,541	258,749	I. 22,792	8.8
Net earnings	$76,678	$33,167	I. $43,511	131.5
Gross earn. per mile	2,225	1,813	I. 412	22.7
Net " " "	476	206	I. 270	131.5
Per cent. of expenses	78.6	88.6	D. 10.0	.....

The report says that it is evident that the road cannot succeed as a narrow-gauge, and improvements have been stopped by the pending litigation. To change the road to standard gauge will require $960,000, and to pay off the debt and secure complete possession of the Cleveland terminals and the equipment will take $830,000 more, but nothing can be done towards raising this $1,790,000 at present.

Portland & Ogdensburg.

This company owns a line from Portland, Me., to Fabyan, N. H., 91 miles, with a short section from Scott's Mills, N. H., to Lunenburg, Vt., 3 miles. This section is connected with the main line by the Boston, Concord & Montreal track from Fabyan to Scott's Mills, 20½ miles. The report is for the year ending Sept. 30.

The earnings of the year were as follows:

	1885-86.	1884-85.	Inc. or Dec.	P.c.
Earnings	$361,376	$361,993	D. $617	0.2
Expenses	239,564	262,836	D. 23,242	8.8
Net earnings	$121,782	$99,157	I. $22,625	22.9
Gross earn. per mile	3,844	3,851	D. 7	0.2
Net " "	1,296	1,055	I. 241	22.9
Per cent. of expenses	66.3	72.6	D. 6.3	.. .

The road has been operated for some time by a receiver, but has just passed into possession of a new company organized by the bondholders.

Pittsburgh Junction.

This company owns a line across Pittsburgh, Pa., 4½ miles long, with a branch 1½ miles long. It was built to connect the Baltimore & Ohio with the Pittsburgh & Western, and also with a number of factories and furnaces. The report is for the year ending Dec. 31.

The earnings for the year were as follows:

	1886.	1885.	Increase.	P. c.
Earnings	$176,000	$116,008	$59,992	51.7
Expenses	35,910	15,333	20,577	134.5
Net earnings	$140,090	$100,675	$39.415	39.1
Gross earn. per mile	29,333	19,335	9,998	51.7
Net " " "	23,348	16,779	6,569	39.1
Per cent. of exps.	20.4	13.2	7.2	.....

Interest and other charges amounted to $105,649 and dividends on preferred stock to $33,500; a total of $139,149, leaving a surplus of $941 for the year.

Troy & Boston.

This company owns a line from Troy, N. Y., to the Vermont line, 35 miles. It leases the Troy & Bennington road, from the state line to Bennington, Vt., 6 miles, and (from the state of Massachusetts) the Southern Vermont road, from the Vermont to the Massachusetts line, 5 miles. Its trains run over the Troy & Greenfield road from the state line to North Adams, Mass., 6.5 miles, making 52.5 miles worked. The report is for the year ending Sept. 30.

The company has $1,623,110 stock and $2,656,500 bonds. A sale to the Fitchburg Railroad Co. is in negotiation.

The earnings for the year were as follows:

	1885-86.	1884-85.	Inc. or Dec.	P. c.
Earnings	$475,200	$420,743	I. $54,457	12.9
Expenses	246,059	229,613	I. 16,4.6	7.1
Net earings	$229.141	$191,130	I. $38,011	19.9
Gross earn. per mile	9,051	8,013	I. 1,038	12.9
Net " "	4,367	3,641	I. 726	19 9
Per cent. of exps.	51.8	54.6	D. 2.8	....

Receipts from other sources last year were $1,841, making the net income $230,982. The total charges amounted to $253,176, showing a deficit of $22,194 for the year.